the OIL AND GAS JOURNAL

JANUARY 16
1941

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Trends

Panorama Reveals Several Important Oil Developments

THE week's panorama of oil included a revival of buying in the Gulf Coast areas, the adoption of 100 per cent tank tables in Oklahoma and Kansas crude purchases by a large purchaser and further evidence of important new field discoveries at scattered points. Crude-oil and refinery markets generally were unchanged as to quotations with the movement of the heavier products at interior points reflecting a strong seasonal demand. The placing of tanker-lot orders with Gulf Coast sellers after a long lull is interpreted as a reflection of the reductions in tanker rates. While these rates are still relatively high, the recent reductions have attracted enough new buying to improve markets in that area. Reports show that the statistical position of the smaller Gulf Coast refiners is better than it was a year ago and continued buying through January would place those sellers on the bullish side of coastal markets. Improvement in other parts of Texas is reported as a result of the state's lower crude output.

CRUDE PRODUCTION *3,372,280 bbl. daily average—up 13,315 bbl. One year ago 3,573,382 bbl.*

CRUDE STOCKS *260,643,000 bbl. as of January 4—down 909,000 bbl. One year ago 238,581,000 bbl.*

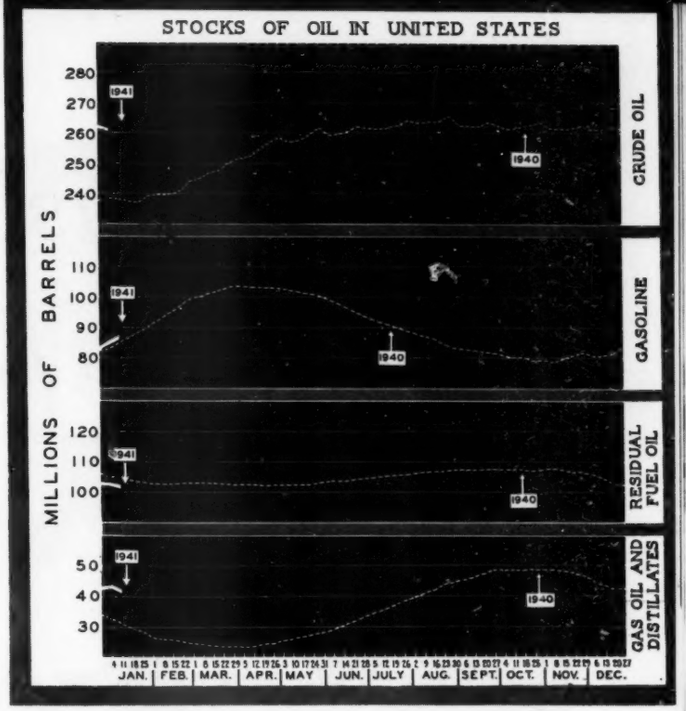
GASOLINE STOCKS *86,328,000 bbl. as of January 11—up 798,000 bbl. One year ago 85,743,000 bbl.*

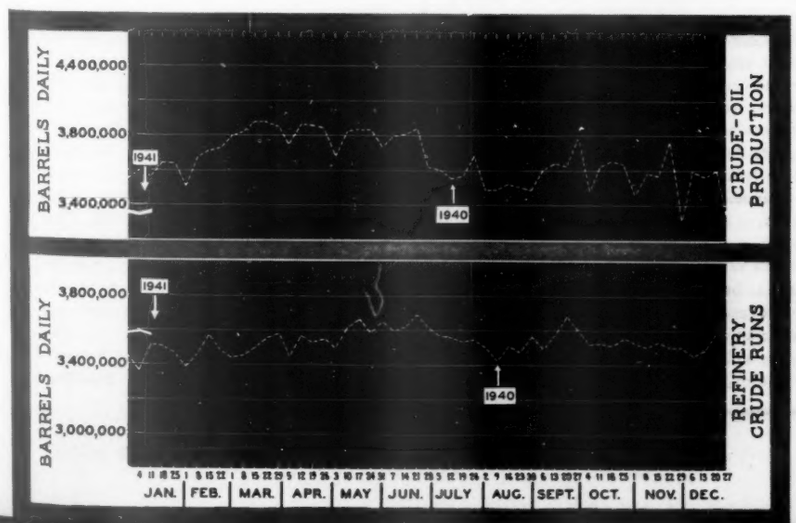
RESIDUAL FUEL-OIL STOCKS *102,281,000 bbl. as of January 11—down 282,000 bbl. One year ago 104,572,000 bbl.*

GAS OIL AND DISTILLATES *41,094,000 bbl. as of January 11—down 1,512,000 bbl. One year ago 31,143,000 bbl.*

REFINERY RUNS *3,565,000 bbl. daily week ended January 11—down 35,000 bbl. One year ago 3,520,000 bbl.*

The action of the Oklahoma and Kansas buyer in adopting 100 per cent tank tables in crude purchases—replacing the previous practice of 97 per cent—is interpreted as another step in the direction of bringing about greater uniformity in all matters that have to do with the purchase and transportation of crude from the fields to the refineries. At this time there is considerable disparity as to methods between states and between the crude-purchasing companies. This involves not only the percentage relationship to the tank tables but also the methods of testing and corrections for temperatures. Buyers generally will welcome the adoption of uniform buying practices in all areas. While the adoption of the higher percentage figure in relation to the tank tables is interpreted as a "break" for the producers, buyers are pointing out that the value of a barrel of crude oil in the final analysis is determined in the refinery operations. If the increased costs to the purchaser, due to the changes in method of buying, are not justified by refinery yields, adjustments downward in posted schedules will be necessary.





DAILY AVERAGE PRODUCTION FOR WEEK

	Jan. 11, 1941	Bur. Mines Jan. est. of demand	January state allowables	Jan. 4, 1941
Arkansas	69,560	66,100	70,666	69,135
California	613,250	594,800	571,000	600,300
Eastern fields	112,400	114,800	.....	108,200
Illinois	325,300	340,300	.....	326,100
Kansas	189,000	191,000	194,000	181,450
Louisiana	293,680	287,400	292,756	293,335
North Louisiana	*68,830*	.....	.....	*69,135*
Louisiana Gulf Coast	*224,850*	.....	.....	*224,200*
Michigan	40,790	46,100	.....	41,840
Mississippi	17,615	15,200	.....	14,930
Nebraska	2,290	2,000	..	2,320
New Mexico	104,010	100,000	104,000	103,530
Oklahoma	388,275	439,000	390,000	404,625
Rocky Mountain states	95,660	96,800	.....	94,350
Texas	1,120,450	1,297,500	1,370,000	1,118,850
East Texas	*301,275*	.....	.....	*301,225*
West Texas	*176,175*	.....	.....	*174,320*
North Central Texas	*120,300*	.....	.....	*120,525*
East Central Texas	*75,050*	.....	.....	*76,680*
Texas Panhandle	*71,525*	.....	.....	*71,400*
Texas Gulf Coast	*297,800*	.....	.....	*295,950*
Southwest Texas	*78,325*	.....	.....	*78,750*
Total United States	3,372,280	3,591,000	.....	3,358,965
Production January 1-January 11, 1941			36,482,395 bbl.	
Same period last year			39,470,254 bbl.	

Important new field discoveries have been reported over the past week and since the first of the year. The most important of these have been the deep-pay production in Illinois, developments in eastern Texas and scattered discoveries in the remainder of Texas and California (see Field Developments, Page 55, this issue). While it is too early to evaluate most of these discoveries, field reports indicate some of them will prove to be of major importance. Observers are stressing the necessity of orderly development of all new fields if the overproduction trends of 1939 and 1940 are to be avoided this year.

Private Custody of Petroleum Resources Draws Acclaim

Ralph O. Dietler, of Tulsa, left, president of Stanolind Oil Purchasing Co. and chairman of the arrangements committee for the Kansas-Oklahoma division meeting, welcoming J. C. Hunter, of Abilene, Tex., president of the general association. C. C. Herndon, Tulsa, vice president and counsel for Skelly Oil Co., toastmaster of the meeting, joined in the greeting. P. H. Bohart, Gulf Oil Corp., in background

By H. STANLEY NORMAN

THE unimpeachable record of the oil industry in conducting its affairs in a manner that assures the nation of supplies to deal with all normal and emergency demands, was reviewed before 1,200 southwestern oil men and their wives at Tulsa, January 11. The setting was the annual-dinner meeting of the Kansas-Oklahoma division of the Mid-Continent Oil and Gas Association, held in the Tulsa Coliseum.

Sandwiched between the reports on stewardship of the oil industry was a vivid viewpoint of America's position in world affairs presented by Henry R. Luce, New York, president of Time, Inc., and editor of Time, Life, Fortune, and Architectural Forum.

Plea that the United States declare its war aims and that it assume the obligation to feed the hungry of Europe and other nations was made by Mr. Luce. He called for this country to supply the leadership, the skill and the vigor that will make the United States the world power it deserves to be.

Representatives from practically all oil-producing states in the Southwest were in the hall when Robert S. Kerr, of Oklahoma City, Okla., president of the division and head of the Kerlyn Oil Co., sent the meeting under way. C. C. Herndon, of Tulsa, vice president and counsel of Skelly Oil Co., was toastmaster.

Predicate for the more detailed review on the meeting's theme, "Place of the Petroleum Industry in the National Defense," was laid by Mr. Herndon when he pointed out that complete preparedness of the industry had been accomplished without subsidies or government assistance in any form.

Congressman Wesley E. Disney of Tulsa was among the public officials, committeemen and industrial leaders introduced. Representative Disney warned oil men that another and more determined effort will be made this year to eliminate or drastically modify the depletion allowance of 27½ per cent. He appealed to oil men to put their senators and representatives to work in the fight to protect this depletion clause in the tax law. President Roosevelt, Mr. Disney reported, had referred to the depletion allowance as "tax evasion." He suggested that oil men might find it advisable to make a voluntary reduction in the amount of depletion allowance.

Arrangements for the meeting were under the direction of Ralph O. Dietler, Tulsa, president of Stanolind Oil Purchasing Co., chairman, and J. F. McManmon, National Bank of Tulsa, vice chairman. Clarel B. Mapes, secretary-treasurer of the association, was active on all committees.

"Any true conception of our world must, it seems to me," said Mr. Luce, "include a vivid awareness of at least these three propositions: First, our world of 2,000,000,000 human beings is, for the first time in human history, one world—fundamentally indivisible. Second, our world — and again for the first time in human history —is capable of producing all the material needs of the entire human family. Third, the world of the twentieth century, if it is to come to life in any nobility of health and vigor, must be to a significant degree an American century."

Four planes of life and work for accomplishing the concept he painted of America were suggested by Mr. Luce. They were:

First, economic, including a vision of America as the principal guarantor of the freedom of the seas and as the dynamic leader of world trade. Second, influence, visualizing diffusement of American technicians, scientists, artists and professional men throughout the world where their skills are needed. Third, humanitarian policy, with America in the role of the Good Samaritan feeding all of the hungry people in the world that it can reach, reserving "a very tough attitude" toward all hostile governments. Fourth, pattern of life, with America as the powerhouse of the ideal of freedom and justice.

Pertinent answers of the men participating in the panel discussion of the petroleum industry's place in national defense are presented on Page 21. The "information please" method of presenting the oil industry's defense qualifica-

(Continued on Page 36)

H. R. LUCE

Time Editor Calls For U. S. Statement Of War Aims

AMERICA and America alone can and must state the war aims. Germany has no war aims except to get all she can get. Great Britain cannot win this war without American help.

The necessary purpose of the American people can be nothing less than to create the twentieth century.

Our world of 2,000,000,000 human beings is one world—fundamentally indivisible—capable of producing all the material needs of the entire human family. The world of the twentieth century must be to a significant degree American.

Freedom requires far greater living space than tyranny. Justice will come near to losing all meaning unless it can have approximately the same fundamental meanings in many lands.

America has no adequate, strong, confident vision of itself as the leading power in the modern world. We feel no good and sufficient reason for going into the war.

You and I know that no isolationist ever will be able to come forward with a vision of America, which can put joy and gladness and enthusiasm in our hearts.

We have to decide whether or not we shall have for ourselves and our friends freedom of the seas.

We must undertake now to be the Good Samaritan of the entire world. For every dollar we spend on armaments, I believe we should spend at least a dime in a gigantic effort to feed the world.

This nation cannot endure unless there courses strongly through its veins the blood of purpose and enterprise and high resolve.

Answers to the questions on defensive preparedness of the petroleum industry were supplied by these four men selected because of their intimate knowledge of various branches of the industry. The men are: Chester H. Gray, Washington, D. C., director of the National Highway Users Conference, answering for consumer interests; Baird H. Markham, New York, director of the American Petroleum Industries Committee, who gave figures on oil-industry tax payments and government expenditures; Gustav Egloff, Chicago, director of research for the Universal Oil Products Co., respondent to technical questions, and George A. Hill, Jr., Houston, Tex., president of the Houston Oil Co. of Texas, who replied to questions dealing with reserves and producing ability of the nation

Quiz Shows Industry Ready

CHESTER H. GRAY

AS representative of the consumers and users of our national highways I want to say that we feel that oil and the oil industry are very vital in times of peace and national emergencies. It is to be regretted that governmental agencies continue to seek to regulate and dominate it and other industries.

There will be no bottlenecks in highway transportation. The roads that have been built in the last 20 years can be used for the national defense. In the first World War most of these highways did not exist.

There are 30,600,000 motor vehicles, not to include 400,000 official cars that are not required to register, or roughly 31,000,000 auto vehicles, and together with 4,500,000 trucks and buses, use and maintain the roads.

If given a chance the motor vehicles of this country could be drafted to move our soldiers to points required in defending the country from attack. And the vehicles could move swiftly over paved roads.

The so-called superhighways of the Germans are not required in this country. To build entirely new roads would be costly while at much less expense the prevailing pivotal roads may be enlarged, widened and maintained.

And as to automobiles: We have enough cars to better the 'taxicab' army of Paris. We've got the roads —and we've got enough cars that every man, woman and child could ride to the war at one time!

BAIRD H. MARKHAM

THE unmatched enterprise that characterizes the American petroleum industry, a highly competitive and privately owned industry, is continually discovering new reserves. One-half of the world's known reserves are in this country, and production could easily exceed consumption.

The rate of discovery of proved oil reserves considerably has exceeded the production from existing sources. Reserves now could supply all wants for 18 years, if not another drop were discovered.

More than 15 billion barrels of oil have been produced since 1925, and with a value of $16,500,000,000.

Since 1917 the price of gasoline has steadily declined. There will be no price bottlenecks.

The highway system of the nation, crisscrossing it in every direction, was built not by subsidy but by the motor operators. The actual facts are that the automobile and gasoline taxes have been the chief basis for highway building.

The 1940 tax bill of the petroleum industry represented 11 per cent of all taxes paid in this country.

It is difficult to estimate what the national defense will cost. I quote President Roosevelt as the authority for such a fact, but with Congress appropriating or favoring $28,000,000,000 for national defense it is safe to forecast that a growing deficit is inevitable, just as the fact that borrowing is inevitable, and tax increases are inevitable in view of our present program of tremendously expanded expenditures.

GUSTAV EGLOFF

THERE will be no shortage of gasoline for any of the purposes the national defense may develop. Refinery capacity is ample and can be expanded at a moment's notice. There will be no gasolineless Sundays.

The gasoline furnished the public today is superior to that produced in 1917.

The refineries of the country are capable of turning out whatever lubricants will be needed to continue the peacetime or military needs of the nation. This is true particularly in serving the high type of airplanes that we are building for our own defense purposes. Many of these ships will be capable of making 500 m.p.h.

The petroleum industry is ideally adapted to overcome bottlenecks of supply of raw and synthetic products, particularly of rubber. Where natural-rubber supplies total but 12,000,000 lb. a year, synthetic rubber made from petroleum could furnish 85,000,000 lb. annually. And as to the danger of our supplies from the Far East being cut off, it is no jest to estimate that synthetic-rubber plants can be built at a cost of but $200,000,000 to adequately provide our future rubber needs.

Another bottleneck is in toluene, used in the production of TNT. The oil industry now can produce this substance in greater quantities than ever before—85 billion pounds of explosives a year.

We can be the oil arsenal of the world. We are waiting for the word "Go!"

GEORGE A. HILL, JR.

THE oil reserves are adequate for any need, peacetime or national defense. On January 1, 1940, the estimated reserves were 18,500,000,000 bbl.

The oil reserves are constantly enlarged as exploratory work continues and each year has seen the new oil discovered exceed that consumed. This expansion has been due to private enterprise and ownership, making the petroleum industry the best prepared of any business to promptly and effectively serve the nation under any circumstance.

The petroleum industry can almost immediately change its program of operations. The present policy of curtailment can be abandoned by the mere turning of valves. In my state alone there are 35,000 oil wells choked back. East Texas alone had 131 shutdown days in 1940.

The oil storage above ground constitutes working stocks. The best storage tanks were created by nature—in the subsoil.

There will be no bottleneck in the movement of oils to centers of consumption. The pipe lines, the tank cars of the railroads and the fleets of trucks can be made available.

While the refineries along the coasts may be vulnerable to aerial attack, the facts that the bulk of the oil fields and most of the plants are in the interior tend to form another line of oil defense.

A point not fully appreciated by many is that the petroleum industry has progressed without subsidy.

SPARKS . . . FROM THE NEWS

DEEP REVIVAL: The Lisbon-Sugar Creek field of North Louisiana is another area that is being revived through deep drilling.

WIDENING CORRELATION: Much has been said about correlating motor fuels and engine design. An S.A.E. speaker wants the correlation to include lubricating oils.

ANOTHER MARATHON? The new Woodbine sand boom is moving more rapidly than East Texas did at the start. Several operators predict it will not have the same staying powers.

GOVERNMENTAL POLICY: After refusing to do anything for more than 30 years, the I.C.C. waits until the country is faced with a defense emergency to exercise its assumed legal duty to apply uniform rates to pipe-line transportation.

CONTRAST: The new member of the Oklahoma Corporation Commission will continue in his job as director of oil conservation, saving the state $6,000 yearly. The new federal budget provides a $200,000 boost for Thurman Arnold's antitrust department.

ROAR: Complaints from Mid-Continent and Middle West refiners regarding the sale of motor fuels refined at distillate plants in northern markets are reaching the proportions of a roar. The product with quality and low price is strong competition.

PROMPT ACTION: Three New England states formally ratified the first 10 amendments to the constitution in 1939, according to the 1940 Congressional Record. Equally prompt action on federal oil-control legislation would be welcome.

FLEXIBLE RUBBER: The statement at the Mid-Continent Oil and Gas Association dinner that the industry, with its synthetic rubber, could "send America to war on rubber tires," brought the suggestion from Time's Luce that the industry might go a step farther and "pay the cost with rubber dollars."

SUGGESTION: A Mid-Continent operator says: "Basins and arches covered by the vast prairies of the Dakotas, and Nebraska and Kansas have wildcatters holding their breath for what appears to be the next long-shot play." A Gulf Coast producer who favors the plays of that area suggests they resume their breathing.

A ROSE, ETC.: There is great excitement over the possibilities of the Trenton in Illinois on the part of men who would ignore it completely if it were called the Viola.

VIGOROUS INVALID: The ailing Gulf Coast market turned out to be a patient that responded promptly to the right medicine—a little cargo-gasoline business.

SKEPTICAL: Some skeptics still want to see how the 100 per cent tank-table purchase policy in Oklahoma and Kansas will work out in practice. The final proof will come from refinery revenue.

UNCLE SAM SURVEYS OIL INDUSTRY'S PREPAREDNESS . . .

The Pasadena Tournament of Roses parade on January 1 was witnessed by an estimated million and a half people. Standard Oil Co. of California was represented by a float which called attention to the fact that the oil industry is prepared to render every aid to the national defense. A huge figure of Uncle Sam sat relaxed in a big chair while the world revolved at his side. In front of the figure was an oil tank symbolizing the preparedness of the industry

TEST SITES: If promoters of new towns in the future would test for oil before locating sites, the practice would simplify conservation control problems. Two of 1941's prospective big pools include townsites.

ENFORCED DEPLETION: Owners of black-oil production at Maverick Springs, Wyo., who have had no market for many years under governmental orders must now produce or pay royalty anyway. Why not keep this reserve for the next emergency?

Lisbon-Sugar Creek Shows Interesting Possibilities

By FRANK H. MILLER[1] and GEORGE WEBER

Believing that production would be obtained from the Cotton Valley sands in the Lisbon and Sugar Creek fields, operators have recently begun deep drilling in these areas. This article shows the success that has been achieved from these operations as well as the structural data disclosed by deep wells.

SHREVEPORT, La.—Recent drilling below the lower Glen Rose formation has increased interest in the Lisbon-Sugar Creek area of Claiborne Parish, North Louisiana. To date one oil sand and two gas-condensate sands have been opened to production in the Hosston (Travis Peak) and Cotton Valley formations, and the possibilities for developing further gas and oil production of importance are well regarded.

The Lisbon field was discovered in late 1936 and oil production in the Pettit lime of the lower Glen Rose formation was developed over an extent of 6,500 acres. The field was largely overdrilled, however, and subsequent market conditions and declining reservoir pressure have reacted adversely to operators' interests.

In the summer of 1939 the Lisbon Exploration Co., a cooperative project, was formed to explore the deeper possibilities at Lisbon. The company, supported by major oil companies, independent operators and other interested parties, drilled 1 Vaughn, located in 36-21n-5w in the field.[2] The deep test was carried to a total depth of 8,900 ft., encountering three Cotton Valley sands showing gas-condensate production.

The well was completed in late 1939, producing high-pressure gas and condensate from a Cotton Valley sand termed the Vaughn sand. It is now producing an average of 110 bbl. of condensate daily, together with about 7,000,000 cu. ft. of gas, used to repressure the Pettit lime horizon of the field. The 1 Vaughn pointed the possibilities for further development of the deep Cotton Valley sands, and was largely responsible for the drilling of two recent tests in and near the field.

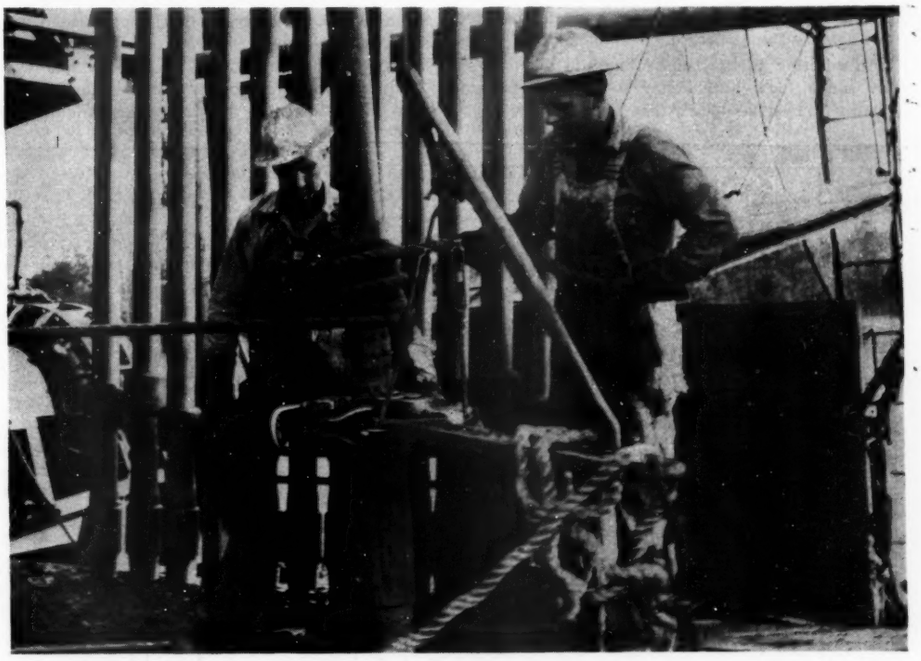
Structure

On the basis of limited information from geophysical and drilling exploration, the Lisbon structure appears to be an anticline of considerable size. The extent of oil production in the Pettit lime is defined by the porosity of the lime, rather than by structural features. The field as now defined is located on the south flank of the Lisbon structure. The producing possibilities of the lower Glen Rose and deeper formations are little explored, excepting on the south flank.

The Sugar Creek structure consists of an anticlinal dome, separated from the Lisbon structure by a shallow syncline. Oil and gas production has been developed in the lower Glen Rose formation, but although large sand bodies showing oil and gas exist in the Cotton Valley formation, they are not at present productive of oil or gas.

The structure of the Lisbon-Sugar Creek area is best shown by contouring the base of the Ferry Lake or massive anhydrite. Fig. 1 combines data from Grage,[3] Warren[3] and Clark[4] with more recent information gained from deep drilling in the area.

1. Petroleum Engineer, Lisbon Exploration Co.
2. Torrey, Paul D., and Miller, Frank H., "Deepening and Completing a Well in the Lisbon Field, Louisiana—A Study in Modern Cooperative Practice," Petroleum Engineer, Feb.-Sept., 1940.
3. Grage, V. P., and Warren, E. F., "Lisbon Oil Field, Claiborne and Lincoln Parishes, Louisiana," Bulletin A.A.P.G., Vol. 23, No. 3, Mar. 1939, pp. 281-324.
4. Clark, C. C., "Sugar Creek Field, Claiborne Parish, Louisiana," Bulletin A.A.P.G., Vol. 22, No. 1, Nov. 1938, pp. 1504-18.



Going back into the hole on the Union Producing Co. 1-A Meadows, deep test located north of the Lisbon field, Claiborne Parish, Louisiana. It has set 7-in. casing in Smackover lime at 10,393 ft., and is drilling ahead

Recent Drilling

A study of Lisbon Exploration Co. 1 Vaughn, located on the flank of the Lisbon structure, indicated that oil production might be encountered downdip in the sands showing gas-condensate in the deep test. On the other hand, those sands which carried salt water had a possibility of producing oil or gas upstructure.

Two deep tests drilled this year have explored these possibilities. Union Producing Co. is drilling 1-A Meadows, located 3 miles north-northeast of 1 Vaughn, and north of Pettit production in the field. This test ran considerably higher than 1 Vaughn, but it is thus far a disappointment so far as finding commercial oil or gas is concerned. A second deep test, drilled in the field about 2 miles southwest of the Vaughn well, J. D. Caruthers, trustee 1 Burgess-Simmons unit, had better success.

The logs of these three wells and of a fourth deep test, drilled on the Sugar Creek structure, now better indicate the possibilities for deep production in the area. Fig. 2 is a section extending in a northeast-southwest direction, from Union Producing Co. 1-A Meadows on the northwest to Triangle Drilling Co., Inc. 2 Brownfield on the southwest. The correlation of these four tests reveals much more regarding the deep formations than was known prior to the drilling of the last two tests.

The Ferry Lake, or massive anhydrite, shows a slight thinning downstructure at Lisbon, but thickens to the southwest in the Sugar Creek field. The interval between the base of the anhydrite and the top of the Hosston or Travis Peak formation, thins from the Burgess well to the southwest, and also to the northeast, upstructure on the Lisbon anticlinal nose. The Hosston also thins toward the tops of the two structures, increasing the rate of dip of successively deeper sediments. In Fig. 2 the profile of the syncline is most accurately shown on the Ferry Lake anhydrite, and the increasing dip shown on the flank of the Lisbon structure is continued to the southwest in the deeper formations.

Caruthers 1 Burgess-Simmons has afforded a better index of producing possibilities at Lisbon than did 1 Vaughn. The first sand discovery occurred in the Burgess, in the transitional zone

above the top of the Hosston, where a sand at a drilling depth of 5,341-62 ft. showed oil saturation. The section was not tested, but its discovery led to the deepening of a Pettit lime well, Oakes, Caruthers and Morelock 1 Whitman, about ⅛ mile to the northwest. The deepened well was completed in the sand, and is producing an average of 75 bbl. of sweet crude daily through a 16/64-in. choke. The sand did not appear in either the 1 Vaughn or 1-A Meadows and is considered to be lenticular and limited in its extent.

Cotton Valley Sands

A comparison of the Cotton Valley sand bodies as penetrated in the three tests at Lisbon, reveals much of interest. The sands encountered in the 1 Vaughn are easily correlated with those in the Burgess well. The thick salt-water sand, called the "first sand," provided a marker for more important deeper sands in the Cotton Valley.

The best example of the characteristics of Cotton Valley sands in the field is the Vaughn sand, producing gas and condensate in the Vaughn well. This body shows a marked thickening downstructure to the southwest. From the Vaughn well, where it has a thickness of 9 ft., it increases in body almost threefold, to 25 ft. in the Burgess well. Upstructure it pinches out and is barely indicated in the Meadows well. Two deeper sands, the Burgess sand and the so-called "third sand," also show thickening downstructure between the Vaughn and Burgess wells. They are not present in the Meadows well, having apparently pinched out against the structure.

In addition to the thickening, the Cotton Valley sands show a tendency to improve in producing properties downstructure. The Vaughn sand in the Burgess well shows permeability averaging 135 millidarcys horizontally and 124 millidarcys vertically. The porosity averages 20 per cent. Unlike most Cotton Valley sands, the Vaughn sand is very soft. No definite comparison of the characteristics of this sand in the Vaughn and Burgess wells is possible, since it was not cored in the former, but the electrical logs indicate a definite increase in porosity to the Burgess well on the southwest.

The Burgess sand, which produces gas and condensate in the Burgess well, is more typical of the Cotton Valley series, being a hard gray calcareous sand averaging 13-14 per cent porosity. The permeability of the sand is low, as is shown by the flow of the Burgess well. The well is still cleaning and improving its potential, but latest gages showed it averaging 2,000,000 cu. ft. of gas and 110 bbl. of condensate daily through a 26/64-in. choke. This ratio of 2.3 gal. of condensate per thousand cubic feet is much better than that of the Vaughn sand.

The Burgess sand shows a thickening from 28 ft. in the Vaughn well to 36 ft. in the Burgess well. The third sand likewise thickens from 8 ft. in the Vaughn to 14 ft. in the Burgess well. Neither of the two deeper sands is found in the Meadows well to the northeast, having pinched out upstructure, like the Vaughn sand.

It is not possible to correlate the Cotton Valley sands at Lisbon with those encountered in the 2 Brownfield at Sugar Creek. The latter test is important, however, in that it penetrated very thick sand sections showing oil and gas. The porosity and permeability of these sands were too low for commercial production. The Brownfield well, however, indicates a continuation of the thickening of the Cotton Valley sands, and enhances the possibility for developing larger reserves of gas and condensate and possibly oil, in the intervening area between the Burgess and Brownfield wells.

Deeper Pays

Another indication for more production at Lisbon is seen in sections below those drilled in the Vaughn and Burgess wells. The Meadows well, which showed a thinner section of the first salt-water sand, and no Vaughn or lower sands encountered in the other two Lisbon tests, does, however, encounter sand bodies at greater depths. The Cotton Valley producers in the field were halted in a section corresponding to a shale section in the Meadows well. This is underlain by several interesting sand bodies, as shown on the electrical log. In addition, a coquina lime was drilled in the latter well, at 8,954-67 ft. This lime showed oil although a drill-stem test failed and its commercial possibilities are not yet known. The Burgess well would encounter this section approximately 250-300 ft. below present total depth. A sand near the base of the Cotton Valley also showed oil in the Meadows test, and the oolitic lime at the top of what is believed to be the Smackover formation shows gas.

The deepening of either the Burgess or Vaughn wells would reveal this lower section downstructure, where from all indications the sands should thicken and improve in porosity and permeability. The deepening of existing wells, or drilling of a deeper test in the area between the Burgess and Brownfield wells should show success in finding deep oil or gas production in the Cotton Valley formation.

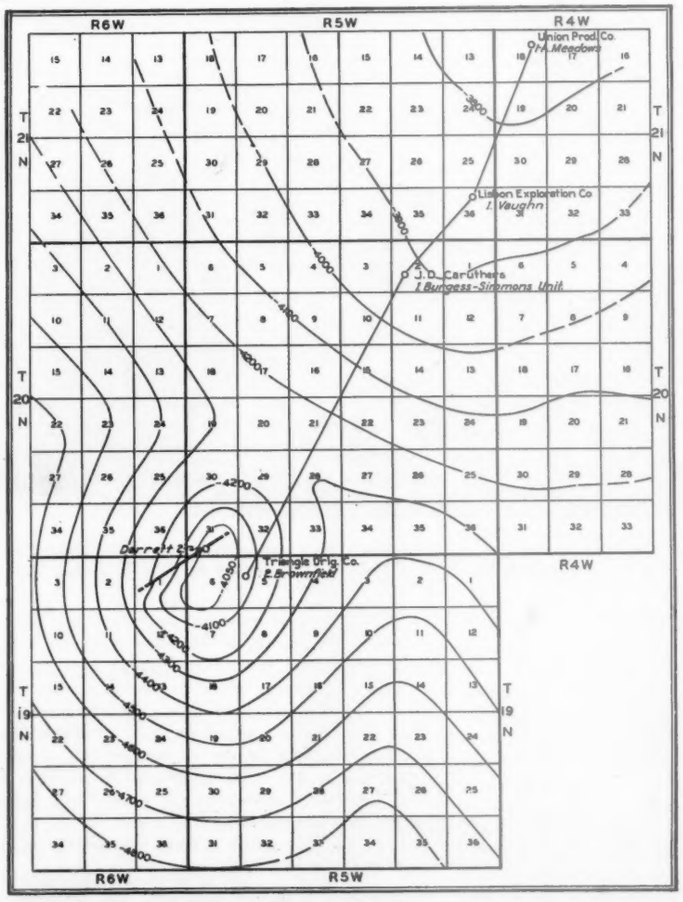


Fig. 1—Subsurface structure map of the Lisbon-Sugar Creek area, contoured on the base of the Ferry Lake (massive) anhydrite

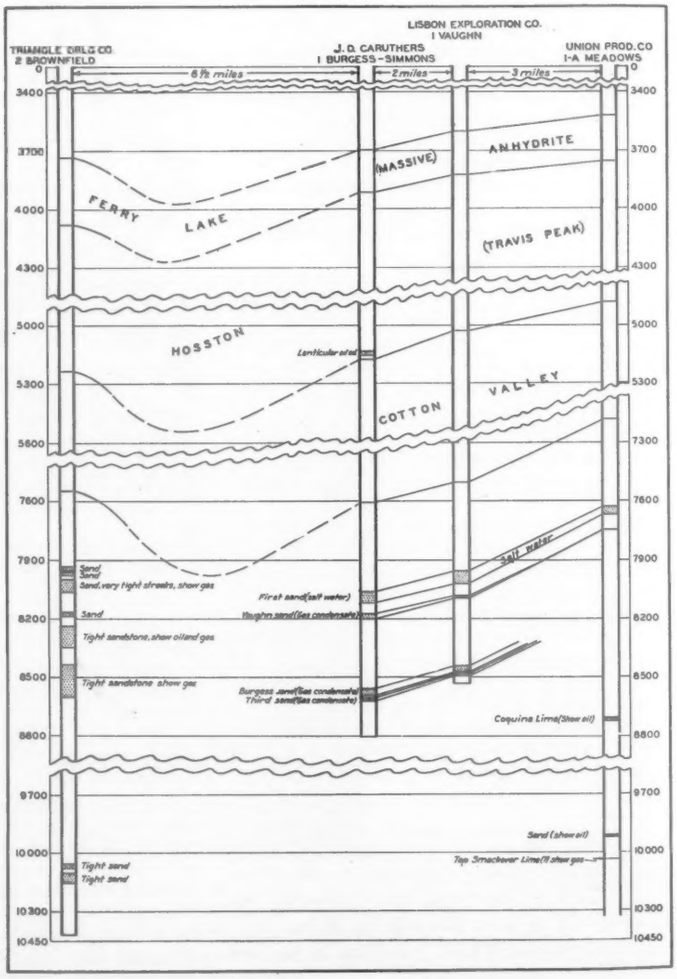
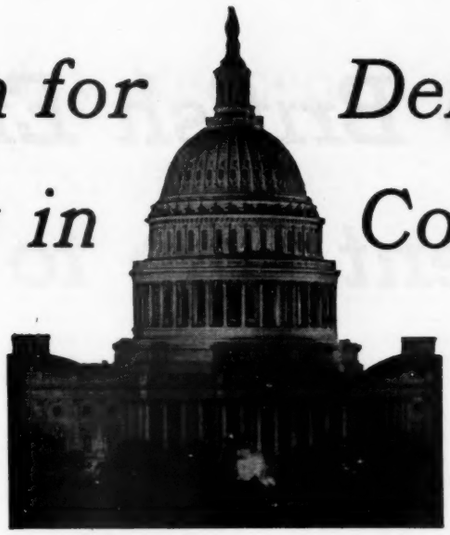


Fig. 2 (right)—Profile of southwest-northeast section of Lisbon-Sugar Creek area

Mobilization for Defense Faces Industry in Coming Weeks



By HENRY D. RALPH

WASHINGTON, D. C., Jan. 14.—Government regimentation of industry for national defense runs through all official talk in Washington these days, and the oil industry may feel the effects of this policy in many ways whether or not Congress enacts special oil-control legislation.

Only a few months back the administration planners were hoping to superimpose the defense program on top of normal business activities without serious dislocations. Now it is admitted that "business as usual" must be abandoned and the defense program put ahead of other considerations, particularly civilian business. The next few weeks will see rapid strides toward all-out industrial mobilization.

The machinery for this is contained in the president's order creating the Office of Production Management, with William Knudsen and Sidney Hillman as director general and associate director general. This office was set up under the direct powers of the president and as a part of executive office, and it supplants parts of the National Defense Advisory Commission which had no direct authority and functioned as an adjunct of a cabinet committee. Among the duties and powers so far assigned to the O.P.M. are instructions to formulate plans for mobilizing the productive facilities of the nation and to take all lawful steps to assure an adequate supply of raw materials essential to production of defense articles.

One of the first actions of the O.P.M. was to organize the Division of Priorities, a minerals and metals section of this division, and an iron and steel priorities committee under this section. The Priorities Division, headed by Edward R. Stettinius, Jr., formerly N.D.A.C. commissioner in charge of raw materials, is equipped and prepared to go much further than the old priorities committee in rationing supplies of all sorts and allocating orders. Mandatory priority orders will not be used so long as voluntary plans are effective.

Oil Industry May Feel Pinch

There are no present plans for applying priorities to oil, and none will be considered under present conditions of supply and demand, but the oil industry may feel the pinch in supplies and materials which it uses. Machine tools are already under a voluntary but widespread priority system, and steel and metal products of all sorts will soon be subject to similar control. This means that orders for steel to go into ships, tanks, guns, or other articles needed for defense or to supply Britain with arms will be filled before civilian and nondefense orders are considered. Steel-producing and fabricating facilities are already being taxed close to capacity, and with the present rate of expansion of defense orders it appears inevitable that nondefense uses of steel must be curtailed, perhaps drastically.

The oil industry, as a large user of steel, may have to show that it must expand facilities for defense purposes or else it will be unable to get steel for derricks, drill pipe, pipe lines, barges, tanks, and other purposes. The industry may also have difficulty securing machine tools for servicing existing equipment, and the time may come when the supply of industrial trucks and tractors will be at a premium. Consumer goods like passenger automobiles and refrigerators will feel the curtailment first, but other users of steel will be rationed, particularly if they attempt to lay in heavy and unneeded inventories.

The fact is, as the president said in his budget message, that in order to make this country the "arsenal of democracy" it is necessary to concentrate our entire productive capacity on turning out defense material. For this reason the budget figure of $17,500,000,000 for the 1942 fiscal year is only a wild guess. The actual measure of federal expenditure is literally the speed with which the money can be spent. Our own defense program and the aid-to-Britain program will be expanded by new congressional authorizations to such an extent that the O.P.M. will have to put every possible factory to work on defense orders, and the speed and amount of deliveries will determine the rate and total of spending.

Definition of Defense Articles

Petroleum products become "defense articles" under the administration's new bill for taking over British war orders. Under this bill a defense article is defined to include any material or supply necessary for the manufacture, servicing, or operation of any weapon, munition, aircraft or vessel, or any other commodity or article for defense. If the legislation goes through in its present form, the Government will have power to manufacture or procure any defense article for the government of any country whose defense the president deems vital to the defense of the United States, and such articles may be disposed of to these governments as the president sees fit. This could easily mean that the Government may handle all British orders for petroleum products. Since the president's powers under the bill are "notwithstanding the provisions of any other law," it is conceivable that purchases of oil for Britain might be made without the usual government bids but by negotiated and possibly forced orders.

Tankers might also be taken over by the president for use by England. Defense information is also included in the bill, which means patents, but there is a provision that the Government pay royalties for patents of United States citizens turned over to foreign governments under this procedure.

With British aid becoming a part of our own defense program and the push for more and faster production increasing, the oil industry like other industries will feel the force of federal regulation more and more in various ways. Congress probably will be so occupied with defense legislation and appropriation bills for the next couple of months that little attention will be given to special legislation affecting the oil industry, but congressional committees will be active during this period, and by late spring or early summer the defense—or war—psychology in Washington may permit the administration to put through an oil-conservation control bill with much less difficulty than it could in normal times.

Cole Committee Has Divorcement Bills

The Cole committee in the House has not yet scheduled hearings on the defense angles of the oil-control bill, but since it must make a report by May 1 it is certain that work will be got under way shortly. This committee now has before it three divorcement bills introduced by Rep. Vincent F. Harrington of Iowa. In the last Congress, similar bills introduced by Mr. Harrington were before the House judiciary committee since they were supposed to be amendments to antitrust laws, but Representative Cole succeeded in getting jurisdiction over the subject by reason of the broad powers to investigate all phases of the oil industry given his group by a resolution of the House. The three bills are similar in pattern. H.R. 1402 would make it illegal after January 1, 1942, for any concern to market petroleum products in interstate commerce while it or an affiliate is also engaged in either production, refining, or transportation; H.R. 1401 would similarly prohibit producers, refiners and marketers of petroleum products from operating tankers and barges; H.R. 1393 would prohibit interstate common-carrier pipe lines from transporting oil in which they have any interest or option to purchase or produced from lands owned by them or affiliates. Identical bills have been introduced in the Senate by Sen. Guy M. Gillette of Iowa, numbered, respectively, S. 170, 171, and 172.

Great interest and also mystery surround the plans of the Temporary National Economic Committee to make its final reports to Congress. In addition to the series of monographs being published, all of which expressly state that they are not to be taken as indicating the nature of the final T.N.E.C. report, the staff has prepared many chapters of a voluminous summary of the hearings and recommendations for bringing about reforms in various industries. Chapters on the oil industry and other mineral and natural-resource industries are virtually completed, but conclusions and recommendations are closely guarded. In addition to the staff report the T.N.E.C. itself will make recommendations, which may differ materially from the staff recommendations. There is no indication that all the 12 members of the T.N.E.C. will agree on all points, so Chairman O'Mahoney and Vice Chairman Sumners might, for example, bring in separate reports on what ought to be done to the oil industry. In addition, and further complicating the picture, various government departments represented on the T.N.E.C. probably will have the privilege of making their own reports and recommendations on various subjects which could easily be different from the commissioner's reports and those by the staff and the writers of the monographs.

Exports to British Empire Off 40 Per Cent Due to War

By J. P. O'DONNELL

NEW YORK, Jan. 14.—Combination of rationing, Germany's submarine blockade, the decline in exchange values and the availability of other sources of supply reduced exports of United States crude oil and refined products to the British Empire 40 per cent from the first month of the war to the last month for which statistics are available—November 1940. Reports of the Bureau of Foreign and Domestic Commerce show that our exports to the empire totaled 6,305,084 bbl. of crude oil and refined products in September 1939, but only 3,752,287 bbl. in November 1940.

Rationing, intended to serve the triple purpose of conserving supplies for war uses, protecting dwindling cash resources and reducing imports, has undoubtedly accounted for the bulk of the reduction. Original basic rations in the United Kingdom limited motor vehicles to from 4 to 10 gal. of motor fuel per month, and at one time 32 per cent of the cars in Great Britain were out of service. With so many vehicles removed from operation and with the remainder so drastically curtailed, it is obvious that Great Britain's domestic requirements were vastly less than in normal times. Rationing was begun in this war within 3 weeks after the hostilities started, whereas it was not until the last year of the first war that the United Kingdom adopted such measures. Rationing is practiced in other parts of the empire as well to protect cash resources for the purchase of war materials more urgently needed.

Germany's submarine blockade has, of course, made it imperative for England to reduce oil imports to a minimum so that other material may also be imported. The decline in exchange values and availability of other sources of supply are somewhat interdependent, for it is obviously to their advantage for those divisions of the empire whose currency is based on the pound to buy where the currency base is the same rather than where the currency standard is other than sterling. Sources of supply other than this country therefore benefit accordingly. On August 25, 1939, just before war broke out, the exchange quotation on the pound was $4.68. Subsequently it dropped almost to $3 and since has been pegged at $4.04. On this basis the purchasing power of the pound here is almost 16 per cent less now than just before the war. The effect of this change has been alleviated, according to reports, by the policy of some companies accepting payment half in sterling and half in gold. This policy reacts more favorably for companies with holdings in the empire.

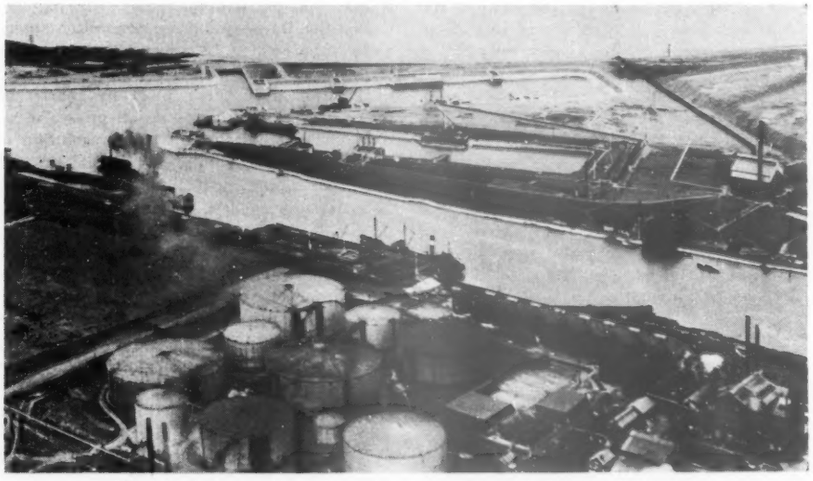
Because of the fact that all empire possessions with the single exception of the United Kingdom itself are outside the war zone, shipments of oil can be made to these destinations in American flag boats. For this reason these possessions will not suffer from the lack of shipping facilities for trade with this country as they will for trade with other countries which is carried on in foreign boats, most of which are subject to the prior demand of the United Kingdom. Ship losses and the slowness of convoys have required the services of all vessels possible.

Current reports are that exports to the empire, particularly to the United Kingdom, are being maintained and the opinion is generally held that they will be maintained at current levels. It is believed that only a more successful submarine campaign by Germany would result in a reduction of United Kingdom imports of United States oil. On the other hand there are reports from Great Britain that her petroleum position is eminently satisfactory. Reports of a lightening of rationing restrictions indicate that from the petroleum standpoint, England is currently well situated.

Canada has been and remains the principal empire buyer of United States petroleum, the September 1939-November 1940 comparison reveals. Her chief oil imports have been crude oil which accounted for 2,585,806 bbl. of 2,960,943 bbl. of oil she imported from this country last November, and 3,880,642 bbl. of 4,403,944 bbl. imported from the United States in September 1939. Reduced imports of crude oil, kerosene, motor fuel and gas oil and distillate fuel oil account for the decline in Canadian imports. Residual-fuel-oil and lubricating-oil imports were virtually unchanged.

In its trade with this country, the United Kingdom increased imports of aviation gasoline only. From a total of only 18,721 bbl. in September 1939 these imports rose to 121,934 bbl. in November 1940. Crude-oil imports were eliminated from the

(Continued on Page 36)



This view of the Stanlow oil docks at Ellesmere Port, England, is typical of numerous terminals along the coastline to which United States exporters are sending more than 500,000 bbl. of petroleum monthly despite German bombings and submarine warfare

U. S. OIL EXPORTS TO BRITISH EMPIRE

(Figures in barrels)

	November 1940	September 1939
United Kingdom	533,460	§1,457,149
Canada	*2,960,943	‖4,403,944
British Honduras	1,669	2,027
Newfoundland, etc.	1,769	273
Bermuda	2,003	2,982
Barbados	79	†174
Jamaica	1,883	5,020
Trinidad, Tobago	1,947	†453
Other British West Indies	1,772	1,400
British Guiana	†154	†252
British India	19,502	33,003
British Malaya	†1,695	†7,815
Ceylon	†876	†454
Burma	†714	1,703
Hong Kong	†4,059	76,148
Australia	‡129,113	159,345
British Oceania	†65	15,830
New Zealand	18,358	5,764
British East Africa	4,031	5,250
Union of South Africa	65,139	118,545
Other British South Africa	†60	†104
Gold Coast	†1,079	4,568
Nigeria	†626	1,386
Other British West Africa	†1,291	495
British Empire	3,752,287	6,305,084
All countries	8,515,958	16,729,937
British Empire per cent	44	38

*Includes 2,585,806 bbl. of crude oil.
†Lubricating oils only.
‡Includes 1,252 bbl. of crude oil.
§Includes 95,698 bbl. of crude oil.
‖Includes 3,880,642 bbl. of crude oil.

ROLE OF EMPIRE IMPORTS OF UNITED STATES OIL

(Figures in barrels)

Product—	September 1939 Empire imports	September 1939 All countries	September 1939 Empire per cent	November 1940 Empire imports	November 1940 All countries	November 1940 Empire per cent
Crude oil	3,976,340	6,924,101	57	2,587,058	3,805,086	68
Motor fuel	1,197,340	3,846,466	31	445,704	1,548,106	29
Aviation fuel	28,665	189,502	15	135,125	346,591	39
Kerosene	145,828	560,101	26	74,216	174,946	42
Gas oil, etc.	440,967	2,892,835	15	100,747	1,178,502	9
Residual fuel oil	100,625	1,329,091	8	73,478	803,691	9
Lube oils	415,475	987,841	42	335,959	659,036	51
Total	6,305,084	16,729,937	38	3,752,287	8,515,958	44

Damage Suits May Reopen Issues in Price-Fixing Case

MADISON, Wis.—Trial of civil damage suits against major oil companies, growing out of the price-fixing conspiracy case tried here 3 years ago, may reopen the issues covered in that case.

This was indicated in Madison federal court a few days ago when Judge Patrick T. Stone, who granted defense motions to make the complaints more definite and certain, pointed out that the defendant companies have a right, if they can, to disprove the allegations in the indictment on which they were convicted. Counsel affirmed that the defendants may attempt to do so.

Ruling on motions in 13 jobber and consumer suits seeking treble damages totaling $4,500,000 under provisions of the Clayton Antitrust Act, Judge Stone held the defendants are entitled to know where the various plaintiffs do business and from whom their purchases of gasoline were made during the period when they allege their businesses were damaged as a result of the conspiracy.

He also granted motions for security of costs from nonresident plaintiffs, but denied a motion to strike from the identical complaints reference to the conviction and the U. S. Supreme Court's judgment sustaining the jury verdict. He allowed 20 days for the filing of answers.

Most of the plaintiffs in the 13 suits filed in this district are jobbers and transport companies doing business in Wisconsin and the Twin Cities area of Minnesota.

In the case of the Northwestern Oil Co., Superior, Wis., which claims it suffered damage of $750,000 as a result of the alleged conspiracy, and which seeks to recover three times that amount, or $2,250,000, defense counsel objected to the verbatim inclusion of the entire price-fixing indictment in the complaint. Complaints in all the suits recited the conspiracy indictment as a means of establishing a prima facie case, leaving them only the burden of proving damages. David Searls, Pure Oil Co. attorney, objected, however, that the Northwestern Oil Co.'s complaint included charges in the indictment on which the defendants were not convicted.

William P. Crawford, Superior, Wis., member of the prosecution staff during the conspiracy trial, now representing the Northwestern company, insisted inclusion of the entire indictment was necessary in establishing a prima facie case.

Judge Stone ruled, however, that "only so much of the indictment as is competent and relevant will be admitted" when counsel pointed to three specific allegations in the indictment which had not been proven.

The defendants were not convicted, he reminded the court, of causing trade papers to publish "fraudulently false prices" during their program of purchasing distress gasoline from independent refiners. The Supreme Court recognized, he pointed out, that the major companies had made 90 per cent of their tank-car purchases "at the low of the market" and not at "artificially increased and arbitrary prices" as alleged in the indictment. The Supreme Court also found, he said, that the Government's charge that the defendants had caused independent refiners to curtail production had not been established.

Major companies represented by counsel here included the Sinclair Refining Co., Pure Oil Co., Socony-Vacuum Oil Co., Inc., Continental Oil Co., Shell Petroleum Corp., Mid-Continent Petroleum Corp., Phillips Petroleum Co., Wadhams Oil Co., Empire Oil & Refining Co., Skelly Oil Co., and the Globe Oil & Refining Co. of Oklahoma and Illinois.

Plaintiffs, in addition to the Superior firm, include Monark Petroleum Corp., Three Star Oil Co., S. P. Leonard, doing business as Hi Test Gas & Oil Co., Wilson Oil Products Co., Sinaiko Brothers Coal & Oil Co., Raymond Brothers Transportation Co., Blue & White Cab Co., Hennepin Transportation Co., Watson Transportation Co.; Welk Transfer Co., suing jointly with Liberty Cleaning Co., Simon Brothers, J. Heilprin, Frank Fruit Co., A. J. Sweet, and Pioneer Paper Stock Co.; and another group consisting of Braun Super Service, Louis Ratner, R. J. Button, doing business as Land o' Lakes Oil Co., Pratt Motor Co., Malmon Tire Co., and Lindquist Oil Co.

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Adopt 100 Per Cent Tank Tables For Kansas-Oklahoma Purchases

THE stronger trend of crude-oil prices was again in evidence last week at scattered points in the Mid-Continent.

The most significant change was announcement of a 100 per cent tank-table purchasing policy in Oklahoma and Kansas by the Texas Co. which becomes effective February 1. Abandonment of the previous policy of paying on 97 per cent of tables sets the gage for similar action by other purchasers. Two weeks ago most purchasers in New Mexico adopted 100 per cent tank-table policies, although Humble Pipe Line Co. had paid on that schedule there for several months.

The Texas Co. will continue a reduction of 1 per cent on all purchases in Oklahoma and Kansas to cover losses in gathering and transportation. Corrections will be made for temperature, allowing or deducting at the rate of 1 per cent for every 25° in temperature above or below 60° F. The full per cent of basic sediment will be deducted.

The Pure Oil Co. posted a flat price of $1.02 per barrel in the Cumberland field, Marshall County, Oklahoma, effective January 10, replacing a previous posting of the regular Mid-Continent gravity scale ranging from 78 cents to $1.10. The Pure Transportation Co. completed a gathering system and short line connecting the Cumberland field with the Texas Pipe Line Co. system at Armstrong. From Armstrong, Cumberland crude is moved south by the Texas Pipe Line Co. to Smiths Bluff, Tex., where Pure has a refinery. Before the pipe-line outlet was completed January 9 Cumberland crude was moved by tank cars and royalty oil was discounted 17 cents per barrel below the posted price to pay freight charges.

A bill was introduced in the house of the Oklahoma Legislature last week to prohibit "strapping . . . or in any way discounting, docking or shorting" crude oil for "waste, shrinkage or other cause." Agitation for such a bill was started 2 months ago at a meeting of the Oklahoma Stripper Well Association in Tulsa.

Humble Oil & Refining Co., largest acreage owner in the new Hawkins pool in Wood County, Texas, was the first large purchaser to enter the field with a posted crude price. The company will pay 78 cents per barrel for the oil and is now building a pipe line from its Longview-Van trunk to the new Wood County field.

Gladewater Refining Co., operator of a refinery at Gladewater, Tex., was reported planning construction of a pipe line from its plant to the Hawkins townsite. Temporarily, Gladewater Refining is paying 35 cents for Hawkins field crude at the well and is trucking the oil to Gladewater.

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J. W. Smithers to Serve On Louisiana Board

J. W. Smithers, prominent New Orleans business man, will be offered an appointment to a new term on the new Board of Minerals, of the Louisiana Department of Minerals. He will serve with B. A. Hardey, of Shreveport, and C. C. Sheppard, of Clarks, on the new board. It was erroneously reported last week that Robert Knox, of Lake Charles, was definitely slated for a post on the board.

Reorganization of the oil-control body is expected to go into effect about February 1, by proclamation of Gov. Sam H. Jones.

Dickey Succeeds Weil as President Of General Petroleum Corp.

The General Petroleum Corp. of California has officially announced the retirement of A. L. Weil from the presidency, and the election of S. J. Dickey to succeed him. Announced also is the election to the board of directors of Fred Isaacs, manager of the company's Mobilgas refineries, and R. L. Minckler, assistant to the president.

Mr. Dickey was elevated to his new position from that of vice president in charge of manufacture. He is the subject of this week's personality sketch on Page 93.

Mr. Weil, the retiring president, is one of the most widely known men in the oil industry. He had been affiliated with General Petroleum for more than 30 years.

Defendants Given Additional Time For Filing Antitrust Answers

WASHINGTON, D. C., Jan. 14.—Defendants in the antitrust suit against 22 major oil companies, their subsidiaries and the American Petroleum Institute have been granted until March 1 for filing answers to the government charges. The order issued by Judge T. Alan Goldsborough here grants the Government the same adcanced date for filing answers to any motion by defendants.

Burner Sales Increase

Shipments of oil burners for the first 11 months of 1940 totaled 252,354 units, according to the Novem ber report of the Bureau of the Census, Department of Commerce. This represents an increase of 24 per cent over the similar period last year when the 11 months' total stood at 203,214 units.

Following the acceptance of Dr. Gustav Egloff, left, and B. B. Weatherby, right, to serve as cochairmen for the scientific and technical committee for the 1942 International Petroleum Exposition in Tulsa, Pres. W. G. Skelly shows them one of the exposition's calendars. Dr. Egloff, director of research for the Universal Oil Products Corp., Chicago, Ill., will be serving as chairman of the exposition's scientific committee for the third time, and Mr. Weatherby, head of the geophysical research department for the Amerada Petroleum Corp., of Tulsa, was selected as cochairman of the committee in 1940 following the death of Dr. C. K. Francis of The Oil and Gas Journal staff who had held the post. The cochairmen announced that their committee will be selected in the near future and work begun on an enlarged Hall of Science display for the 1942 exposition in Tulsa

STATE CAPITALS...

ILLINOIS

A STUDY OF THE PROBLEM of regulation and conservation by the state legislature was urged by Gov. Dwight H. Green, of Illinois, in his inaugural address delivered January 13 at Springfield. In discussing mineral resources, the new governor said that "while considerable legislation has been enacted for their conservation, much still remains to be done.

"Our duty to coming generations as well as the immediate advantage of our people must be seriously and impartially considered by the general assembly. I urge that your study of the problem of regulation and conservation be continued."

The new chief executive was formally inaugurated 5 days after the sixty-second general assembly convened. Rep. Elmer J. Schnackenberg, of Chicago, who was the governor's choice for speaker of the house of representatives and who has never committed himself on the oil question, was named to the key position. Legislative leaders predicted more than 100 measures affecting the state's oil industry would be introduced at the session, including bills to create an oil commission.

A RESOLUTION asking for an investigation by a special committee of the oil interests of former Gov. John Stelle was introduced by Rep. Joseph S. Perry of Glen Ellyn, Ill., before the assembly on Tuesday. In submitting the resolution Representative Perry stated: "It is common knowledge he was intensely interested in opposing legislation for the conservation of Illinois oil supplies, or for proration arrangements or taxing said oil resources, and through his official position as speaker of the senate and influence and contacts he was largely responsible for failure of the passage of any such laws."

Representative Perry also asked an investigation into "the relationship between financial transactions of John Stelle and other persons in connection with acquisition of oil lands, leases and refineries."

MISSISSIPPI

A HEARING FOR FEBRUARY 3 has been called by the Mississippi Oil and Gas Board to consider a petition asking suspension of the 40-acre spacing rule in the Tinsley field of Yazoo County. The 40-acre rule was recently waived when permits were issued for less than 40 acres on a special petition. The field, comprising over 100 wells, has been drilled and developed in an orderly pattern to date.

TEXAS

ADOPTION OF A MORE CONSERVATIVE policy by the Railroad Commission in establishing the monthly oil allowables is causing some speculation among Texas operators as to whether this is the result of a movement for the formation of a new commission to regulate oil and gas production, or if the body has been convinced by current market conditions on the Gulf Coast and other local areas that its recent lenient policy of granting allowable increases to any and all fields that claimed a higher market demand could not be continued. Regardless of the cause, though, the commission's new policies are generally regarded as a step toward a more stabilized proration program.

A bill that would vest the powers of regulating the oil and gas industries in a board of three, to be appointed by the governor, is reported to be drafted for introduction in the legislature which convened this week. All matters concerning the conservation of soil, water, sulfur and other natural resources would be placed under the board's administration, members of which would serve 6-year overlapping terms. If the bill is introduced, its passage is expected only after a hard fight on the part of its proponents. Many operators, and legislators familiar with oil and gas proration, are not convinced that such a body would be the answer to current proration problems. In several previous legislatures, bills were introduced which would strip the Railroad Commission of its oil and gas-regulatory powers, but they made little progress.

OTHER MEASURES AFFECTING THE OIL industry to come up at this session of the legislature include renewal of the general proration law and continuing of Texas' participation in the Interstate Oil Compact Commission, both of which expire in 1941. Need for additional revenue, provisions for which constitute the outstanding problem of the session, may result in attempts to tax further natural resources. There are expected to be introduced measures that would control the production and marketing of condensate and its derivatives. Efforts also may be made to revise the marginal-well law to the extent of lowering the limits set for marginal wells.

PLEDGES OF THE RAILROAD COMMISSION to keep Texas' oil production within Bureau of Mines estimated market demand figures resulted in the state's oil allowable being reduced to 1,307,277 bbl. as of January 11. This figure was 9,777 bbl. over the bureau's figure of 1,297,500 bbl., but subtraction of an estimated 3.5 per cent underproduction of allowables would result in lowering the production to 1,261,522 bbl., or 35,978 bbl. under. Operating only 21 days this month, the net allowable for all fields totaled 1,208,194 bbl. Exemptions to shutdowns, which totaled 99,083 bbl., resulted in raising the total allowable to 1,307,277 bbl. Exemptions to shutdowns gained 12,168 bbl. over the previous week.

According to the report of the Oil and Gas Division, every district in the state showed a decided drop from the allowables of the week ended January 4. The state's leading district, East Texas, was shown with a production of 355,186 bbl. daily, a 15,566-bbl. drop from the previous week. Southwest Texas produced 211,999 bbl., down 6,793 bbl. Gulf Coast production was down 6,263 bbl. to 233,476 bbl. Other districts: East Central, 83,392 bbl., down 559; West Central Texas, 48,755 bbl., down 810; West Texas, 200,822 bbl., down 6,121; North Texas, 112,356 bbl., down 2,019 bbl.; Panhandle, 61,301 bbl., down 2,308 bbl.

STARTS SECOND TERM . . .

GOV. PAYNE RATNER, of Kansas, was inaugurated this week for his second term. The governor was elected by the slim margin of 430 votes, the election being decided by the absentee ballots 16 days after the election. During Governor Ratner's first term, Kansas operators cooperated with the Corporation Commission in holding a large potential production down to actual market conditions. With better days in prospect, the same moderation and sane guidance can be expected

CALIFORNIA

THE CONSERVATION COMMITTEE will meet in Los Angeles, Calif., January 20 to set the allotment for the month of February. While no change is expected to be made in the daily allowable there is a possibility that some revision might be necessary. It is a little too early to see what effect the restricted imports into Canada will have on California production but it is possible that some tangible evidence will be available in another week or 10 days. In addition to this the committee will have some idea as to what may happen with respect to the impending deep-zone development campaign that might break loose in the Inglewood field of Los Angeles Basin. Unless developments between now and the middle of the month show a very material change it would seem logical to assume that the committee will leave the allotment unchanged although a revision might be made in the allowable of top wells.

KANSAS

THE STATE CORPORATION COMMISSION has fixed a January gas allowable of 2,233,000,000 cu. ft. for the Cunningham field of Pratt and Kingman counties. Monthly withdrawal of gas from the Otis field of Barton and Rush counties was set at 1,335,000,000 cu. ft., and for the Lyons field of Rice County it set a January allowable of 434,000,000 cu. ft.

HEARING FOR CLASSIFICATION of the Silica, South Silica, West Silica, Clawson, and Marchand fields will be resumed by the Corporation Commission at Topeka on January 20, after being continued from November 29, 1940. Purpose of the hearing, held on an application of Lario Oil & Gas Co., is to determine whether the fields are one continuous and common reservoir.

NEW MEXICO

THE STATE OIL CONSERVATION COMMISSION in setting the January allowable for New Mexico changed its proration formula for the Hobbs field to conform with that in effect in the Monument field, both fields in Lea County. Basis for the Hobbs field proration formula was changed from 60 per cent acreage and 40 per cent potential to 80 per cent on acreage and 20 per cent on bottom-hole pressure. The commission fixed the January allowable at 104,000 bbl., the same as in December and November 1940.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

Cooperation in Reverse

At a time when the pipe-line branch of the petroleum industry is bending every effort to make its facilities completely available to the defense program, including the needed expansion, the Interstate Commerce Commission decides to use an authority which it has had for 34 years but previously refused to exercise.

The commission has served notice that it plans to place a fixed-percentage ceiling on earnings to apply to all interstate pipe-line operations.

The long delay and the wording of the announcement indicate that the commission was largely motivated by the assumed necessity of carrying out the rate provisions of the Interstate Commerce Act, a law predating the major pipe lines and one designed to cover transportation conditions not found in this industry.

It is particularly unfortunate that the proposal comes at this time. The Defense Commission, following an investigation, was well pleased with the vast underground transportation artery between fields, refineries and distributing centers. Safe from aerial attack, the numerous systems assure continuous and adequate delivery of an essential commodity under all conditions.

That a federal regulatory commission should now threaten an action that will curtail or stop entirely further pipe-line construction which will strengthen every phase of the defense plan, is a sad commentary on the competence of an administration which demands increased speed in production but which, so far as this industry is concerned, insists on throwing a monkey wrench into the machine at every opportunity.

It might better direct its energies to ending the obstructive tactics of competing transportation systems and silly state regulations which are holding up construction programs in important areas.

This demand for a top in earnings springs from an entirely erroneous conception of the part that pipe lines play in the petroleum industry. It is an attempt to apply a principle of public-utility regulation based on the monopoly of a service, to an operation where these conditions do not exist.

The main trouble arises from the fact that there is no general appreciation of the basic truth that pipe lines are not an outside transportation agency serving the petroleum industry but are an essential part of it.

There is no similarity to the railroads which transport the products of many industries with which they have no other connection. Neither do their operations parallel those of a utility furnishing light and power to an area with all protection that goes with a complete monopoly.

A trunk-line system is nothing more than an extension of the casing of thousands of wells furnishing one or more refineries with the needed raw material for plant operation. The fact that the line may cross several states brought it to the attention of the I.C.C., but the operating principle is the same as when the refineries were located within or adjacent to the producing fields.

It is contended that earnings are high in some cases and that pipe-line profits have been used to offset losses in other phases of operations. The profit test of an industry or unit of that industry should apply to the entire operation, not a selected part.

If the Government is going to insist on uniformity in petroleum profits or losses it will have to devise some method of eliminating dry holes, make all wells of the same depths and costs produce the same quantity of oil and locate them all equally distant from market outlets.

While this is being done it would seem that the sensible thing to do is to take things as they are and let the pipe-line operators assume the natural hazards of the business and encourage, rather than defeat, their efforts to expand their service in line with the peaceful and the possible war needs of this country.

Wisconsin Legislature Adopts New Obstructive Tactics

MADISON, Wis.—Opposition to the introduction of natural gas into Wisconsin has taken a new tack in the opening sessions of the 1941 legislature.

Sen. Bernhard Gettelman, Milwaukee, announced he will introduce a bill providing an occupational tax of 10 cents per M.c.f. on all natural gas sold in Wisconsin except processed gases now coming into the state in containers.

With decision of the Federal Power Commission still pending on the applications of the Western and Independent natural-gas companies for certificates of authority to extend pipe lines into the state, supporters of the Gettelman measure are quoted as saying the proposed tax would not force natural gas to stay out of Wisconsin but would constitute a good source of revenue.

However, its supporters are asserted to include several Milwaukee labor unions, coal interests and allied industries which opposed the pipe-line applications at a hearing here last fall before Ewing B. Simpson, Federal Power Commission examiner, and representatives of the Wisconsin, Kansas and Iowa regulatory commissions.

Based on estimates that 23,000,000,000 cu. ft. of natural gas could be sold in Wisconsin the first year, sponsors of the tax measure claim it would yield revenue of $2,300,000 for the state, and if gas sales reached 50,000,000,000 cu. ft. annually at the end of 5 years the tax would net $5,000,000 yearly, they anticipate.

Strong opposition to the bill is expected from private consumers and industries interested in bringing natural gas into the state as well as from the pipe-line interests.

The bill, as outlined, will provide that no person, firm or corporation shall directly or indirectly sell or deliver gas in the state for public use without first obtaining from the state Public Service Commission a certificate of public convenience and necessity.

Gas utilities now operating within the state under permits or franchises hitherto granted by the state or a municipality would not be required to obtain licenses, providing they do not make changeovers in the type of gas furnished. However, the bill states, if changeovers are made, existing utilities will be required to obtain a license, or certificate.

Under the bill also the Public Service Commission would be expected to consider the question whether the proposed service "will or will not have the effect of causing industrial or economic loss, harm or damage by way of disruption of existing industries, losses in taxes and the causing of unemployment on a large scale."

These provisions echo some of the principal arguments which natural-gas opponents sought to place before the F.P.C. hearing here last fall.

The bill provides automatic suspension of license in case of failure to pay the tax, besides a 10 per cent penalty on arrearages and requires a surety bond as a guarantee of future taxes. It also contains a penalty clause calling for $5,000 for each one-quarter of a year or part thereof in which any person, firm or corporation is found guilty of violating the act.

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DEATHS

WILLIAM McCAIN, 67, veteran oil man of Shreveport, La., died last week following a 6-week illness. He was superintendent of oil drilling for many years for the Shell and Standard Oil companies.

JAMES M. GUNN, 82, pioneer oil-well driller, died at a Bradford, Pa., hospital last week from complications accompanying old age. Mr. Gunn was a Canadian by birth, and went to Bradford as a young man. Later he went to Oklahoma, where he followed the oil business for several years. He returned to Bradford about 12 years ago, and made his home there.

ARCHIBALD W. LEONARD, 65, president of the Devonian Oil Co., died at his home in Tulsa, January 7, of a heart attack. He had been suffering from a heart ailment for 2 years, and about a year ago underwent treatments at the Mayo Clinic, in Rochester, Minn. Mr. Leonard was widely known in the oil business. He came to Tulsa in 1904 from Pennsylvania. At one time in his career he helped to organize the Oklahoma Natural Gas Co., of which company he became a director in 1916 and vice president in 1922. While in the latter position he was elected president of the Natural Gas Association of America. He became president of Devonian 2 years ago. His widow and a daughter survive.

MORRIS W. STROUD, president of the American Gas Co., and former director of the Philadelphia Electric Co., died in Villanova, Pa., January 8, after a long illness. He was 80.

Z. H. ANDERSON, Dallas, Tex., formerly with the Vacuum Oil Co. in Tulsa, died January 7 as the result of an automobile accident near San Angelo, Tex. At the time of his death he was with Lee Tuttle & Co., of Dallas. His widow survives.

HARRY R. KAY, 40, general agent for Sinclair Refining Co., in Dallas, Tex., died January 10 in a Dallas hospital. Death was due to a heart attack. Mr. Kay was injured in an automobile accident Christmas eve, and recently underwent an operation. A graduate of Cornell University, Mr. Kay had been associated with Sinclair for the past 10 years. His widow survives.

WILL M. MORGAN, 52, head of the Tulsa refrigerating division of the Worthington Pump & Machinery Co., died January 8 in a Tulsa hospital. Mr. Morgan was widely known in oil circles. Death was attributed to a throat and lung infection that developed from an attack of influenza suffered last spring. The widow and a daughter survive.

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West Central Texas Group Names Forty-five Committeemen

W. J. Rhodes, Breckenridge, Tex., has announced appointment of 45 men to serve on the seven standing committees of the West Central Texas Oil and Gas Association, thus performing his first official act as head of the regional petroleum association for 1941.

Members of the committees are scattered in 15 different towns and cities and included are oil producers, drilling contractors, geologists, land and lease men, attorneys, bankers, landowners and retail merchants. These groups, together with the remainder of the 75 directors of the association, and the officers, will direct the activities of the body this year.

THE MARKETS*

CRUDE OIL: Latent strength of crude oil continues an important factor in the Mid-Continent and Middle West. The most significant development of the week in crude-oil markets is the Texas Co. announcement that 100 per cent tank tables will be adopted as the basis in settling for Oklahoma and Kansas crude effective February 1. Abandonment of 97 per cent tables ends a contention between producers and purchasers that has existed for years. Humble Pipe Line Co. moved promptly in posting a flat price of 78 cents in the new Hawkins field, Wood County, Texas.

REFINERY: Inquiries for at least eight cargoes of products on the Gulf Coast, including six of gasoline, for coastwise and export movement in January stiffened the price structure there which had been drifting for weeks. Improvement on the Gulf had a stimulating moral influence on other markets. Distillate fuel-oil prices are firm. Condensate from recycling plants is furnishing stiff competition for Group 3 refinery gasoline.

TANK-WAGON AND POSTED-DEALER: Tank-wagon prices on gasoline were reduced 0.5 cent per gallon at several points in the northeastern part of the United States. Kerosene tank-wagon prices in Nebraska were adjusted upward in subnormal areas meeting similar action a week ago by Standard Oil Co. (Indiana).

FINANCIAL: Oil securities gained more market support last week. Average of 30 representative stocks for the week ended January 11: High, 24.41; low, 23.49; close, 24.02. Week ended January 4: High, 24.09; low, 22.97; close, 23.77.

*Detailed information in market section.

SABINE RIVER FLOODS HAMPER PUMPING OPERATIONS . . .

Continuous rains in East Texas have in many cases interrupted pumping of wells along the banks of the Sabine River. For the past 6 weeks this stream has been at record height. As shown here, the pumping jack is almost submerged. As in 1927, this well is on a 16-ft. substructure which has enabled it to pump without interruption. The well is in Gregg County, near Gladewater

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Diesel Lubrication Chief Topic At S. A. E. Convention

DETROIT, Mich.—The lubrication of diesel engines was the principal subject for discussion among the petroleum technologists who attended the 4-day annual convention of the Society of Automotive Engineers which closed here January 10.

The detailed discussion of motor fuels which could be used in modern airplanes was studiously avoided as one means for promoting the nation's defense program.

The Fuels and Lubricants Division, which held its meetings January 10, was favored particularly on the subject of diesel-engine lubrication by J. G. McNab, W. C. Winning, B. C. Baldwin and F. L. Miller, of the Esso research laboratories of the Standard Oil Co. of New Jersey. Summarizing their comments, they said:

Diesel engines, like gasoline engines, differ considerably among themselves in the burdens they impose upon the lubricating oil. Emphasis is placed in some cases on ring sticking, wear and piston scuffing and in other cases on sludge formation, varnish, coking, etc. Seemingly contradictory in nature, these problems have been extremely confusing and it has been difficult to find any simple basic relationship among them. A great deal of progress toward solving them has already been made, however, and it appears certain now that adequate solutions are or will be possible.

In general, all diesel engines are characterized by certain features from a lubrication standpoint. Taken as a class, they (1) are more subject to ring sticking, (2) form greater quantities of sludge, and (3) are subject to somewhat higher than normal rates of wear. Bearing corrosion should perhaps be included as a fourth problem, since the majority of the diesel engines are equipped with special-alloy bearings, which are subject to chemical attack should the oil oxidize too rapidly or become contaminated with corrosive materials.

The ring-sticking problem, which may be due either to varnish formation or to accumulation of deposits in the ring zone, is perhaps the most troublesome. It apparently occurs more frequently with the better-refined paraffinic-type oils than with any others. Sludge formation, or separation of sludge deposits in the crankcase and on the filters, however, is probably almost equally a problem. The amount of sludge is generally less with the well-refined paraffinic oils but is still considerable. Wear is perhaps not so common to all types of diesels but it is more pronounced than with gasoline engines and is more often noticed with oils of the naphthenic type.

Sludge Deposits Different

Chemical analyses show that the diesel-engine sludge deposits usually differ significantly from those found in the gasoline engine. Typical analyses of representative filter deposits taken from the two types of engines operating under approximately the same conditions show that the insoluble material has a high carbon content and a carbon/hydrogen weight ratio of approximately 50/1, whereas the sludge from the gasoline engine has a lower carbon content and a much lower carbon/hydrogen weight relation of approximately 10/1. The ash content of the diesel-engine deposits is also much lower. It would appear that the deposits from the diesel are mostly of a sootlike nature and that they originated largely in the combustion chamber, rather than in oxidation of the oil in the crankcase.

The effect of increasing the severity of the operating conditions on performance is illustrated by the data which were obtained in several laboratory engine tests on two representative automotive-diesel engines operating under what might be considered relatively normal conditions and under what might be termed heavy-load conditions. The normal operating conditions for the two engines consisted of a speed of 2,000 r.p.m. and a load of 50 b.hp. For the heavy-load conditions the speed was reduced to 1,500 r.p.m. but the load was maintained at around 45-50 b.hp. In every case, the operation at the higher percentage power output resulted in a much greater contamination of the used oil, the naphtha-insoluble content amounting to from 4 to 12 times that found when running at the lower percentage load. The paraffinic oil also showed greater ring-sticking tendencies under the high-load operation.

A satisfactory diesel-engine lubricant for severe-duty operation should therefore be able to a greater degree than any other oil to accommodate the contaminating sludge from the combustion chamber and from the oxidation of the oil, to reduce ring sticking by keeping the ring zone free of carbonaceous deposits, or by minimizing varnish formation and to reduce wear by improved lubricating characteristics or by permitting the use of base stocks of the paraffinic type which have inherently more satisfactory lubricating properties. It is becoming increasingly apparent that straight mineral oils have for the most part failed to meet these requirements. While judicious selection of the mineral-oil lubricants for particular engines has made reasonably satisfactory operation possible under the milder conditions, and while some have actually been noticeably superior to others, it is rather widely conceded at the present time that only certain specially compounded lubricants have thus far been really satisfactory under the severe-duty operating conditions. One diesel-engine manufacturer now recommends that such specially prepared lubricants be used whenever the severe operating conditions are encountered, where straight mineral oils are no longer able to lubricate the engine properly. Another recommends that they be employed in its equipment under all operating conditions.

Additive Compounds

The additive compounds which have been employed in the manufacture of these new lubricants are of various types, termed "inhibitors," "dispersers," and "detergents." The term "detergent" normally covers both the detergent and dispersion properties. The first compounds of the detergent type to show promise were oil-soluble soaps which were reasonably good detergents but which were oxidation accelerators rather than inhibitors. These could not be employed in engines containing alloy bearings of a corrosion-susceptible type. More recently, other metallic compounds or mixtures of compounds which have combined all three properties have been developed and are being used successfully.

Until very recently, and even at the present time in most cases, one of the drawbacks to the new types of compounded oils has been the fact that their use was largely limited to low viscosity-index naphthenic-base stocks, either because of incompatability of the additive with paraffinic bases, or because of its inability to overcome some of the seemingly inherent weaknesses of the paraffinic-base stocks.

(Continued on Page 36)

Speaker Emphasizes Need of Correlating Lubricating Oil Characteristics and Engine Design

SPEAKING before the Fuels and Lubricants division of the Society of Automotive Engineers which met in Detroit last week, R. J. S. Pigott, Gulf Research & Development Co., summarized the need for correlating lubricating-oil characteristics and engine design, in an unusually frank, complete, and effective manner. He said in part:

"Since oil is an organic material decomposing around 650° F. and inhibitors cannot change this, it seems unwise to continue to disregard high crankcase temperatures due to insufficient cooling. This is the major factor in lubrication troubles.

"Oiling systems must be designed with the motor. Inadequacies should be caught in road tests or proving grounds.

"The effect of mechanical conditions overshadow all oil improvements. Bearings must be made rigid enough to function to full advantage, and oil flows must be great enough to permit cooling at reasonable temperatures.

"Increased cooling is now done by oil; in the future this will probably further increase, especially if piston cooling becomes general. The crankcase supplies barely enough cooling surface now, and if horsepower per cubic inch increases, as it will, external coolers should be used.

"The mania for very light oils and completely 'drying up' the engine should be reconsidered. The light oils make winter starting easier, but they are less stable than heavier grades. The ultimate load-carrying capacity of the bearings is cut down until the danger zone is near operating loads.

"Compounded oils are here to stay. The oil companies have done their part in improving oils to meet the emergency, but suitable inhibitors are not picked out of the air.

"The improvement in engine power during the past 10 years has been 20 per cent due to increase in compression ratio following improvement of octane rating in gasolines, and 80 per cent to straight engineering design.

"Crankcases should be designed to drain clean; many of them retain up to 15 per cent of the full charge."

International

Great Britain . .

England in Strong Position From Oil-Supply Standpoint

THE fact that Great Britain's petroleum picture has not been seriously disturbed by Germany's bombing and submarine blockade is told in a letter to a resident of this country from a member of the Institute of Petroleum in London. The letter states:

"In the oil line I can assure you that we are in a preeminently strong position. . . .

"I wish you could be over here to see things for yourself. As for motoring, the amount is extraordinary and I often wonder, can there be rationing?

"Though the basic rations remain the same, the authorities have quietly been more and more generous to all who have a genuine case for supplementary ration. Again, a very large proportion of those who laid up their cars have gradually taken them into use again.

"The oil-pooling arrangement is working very well and the companies, especially the smaller and lube-oil firms, have long ago realized and admitted they are far better off than they would have been if left to fight each other and try to overcome singlehandedly the problem of imports.

"If I could tell you how much tankage and oil we have lost by enemy action you would probably refuse to believe it—it is so insignificant in the whole picture. I have the figures but naturally I must not print them. But you know me well enough to trust me that this is so.

"Something else you will be interested in is that we have a very nice domestic-oil supply, but again must await the war end to give the details."

Australia . .

Secondary Recovery Considered For the Lakes Entrance Oil Field

DESPITE the fact that in order to conserve foreign exchange with the dollar countries, all units of the British Empire have restricted their imports of petroleum and its products. Disturbed political conditions in Australia have delayed the development of that country's low-pressure oil field in Gippsland, Victoria. Up to the early part of the war there had been considerable interest in the possibilities of developing the Lakes Entrance field by secondary-recovery methods, but recent conditions have delayed this attempt.

Some 38 wells are reported to have been drilled at Lakes Entrance, indicating productivity in 5 of the total of 600 sq. miles which are under license. The oil-bearing sand has an average thickness of 33 ft. with a slight terracing and lies at a depth of from 1,200 to 1,400 ft. The producing sands average 15 per cent porosity and 27 per cent saturation. The average permeability is reported at 77.5 millidarcys.

Presumably because artesian contractors have drilled the wells and, lacking oil-field experience, have failed to case off sands above the producing zone, considerable water has invaded the field. Wells have been drilled into lower sands which also contain water. The result is that the oil produced is an emulsion containing 97 per cent water which is broken with acid. The highest net yield of oil by pumping continuously over a period of several months has been 4.8 bbl. per day. This was obtained from the breaking of the emulsion but the production of a recently completed well that was handled properly is understood to have produced only 9 per cent water.

Lakes Entrance oil is a sweet crude containing mostly distillate fuel and light lubricating-oil fractions. Because there is every reason to believe that high prices could be obtained for many times the quantity now produced, numerous methods of secondary recovery have been considered. The commonwealth oil advisory committee issued a report in December 1938 recommending the application of air repressuring, but no action was taken.

U. S. S. R. . .

Soviet Press Complains About Unsatisfactory Oil Conditions

TWO Soviet publications, Izvestia, the official government organ, and Red Star, the official army publication, carried articles last week indicating that the petroleum situation in the U.S.S.R is still in an unsatisfactory state.

Izvestia announced that production in 1940 while above that of 1939, fell short of the year's plan. It stated that the Kazakhstan, Bashkir and Maikop oil trusts had failed to meet their quotas. It urged that the 1941 plan be met, and declared: "The need for oil is growing constantly, along with the progress of our country. We need much oil to satisfy current needs of industry, agriculture, the army and the fleet."

At the same time, Marshal Semyon Timoshenko ordered strict control of gasoline and oil use in order to build up sufficient reserves. In an editorial announcing the order, Red Star said: "Reserves are sufficient to meet all the needs of the Red Army in both peacetime and war, but every fighter is compelled to save fuel, remembering that this is the most valuable state property."

A reduction of 20 to 35 per cent in the use of fuel was declared possible through making engines more efficient and using them only when necessary, the newspaper pointed out.

Venezuela . .

Decay of European Petroleum Markets Hampers Production

DECAYING European petroleum markets forced another decline in Venezuela's crude-oil production for November. Production in November totaled 13,129,960 bbl., a daily average of 437,665 compared to 443,950 bbl. daily in October.

A decline of more than 400,000 bbl. in the monthly production from the Lagunillas field was the most significant change registered in November. The decline in Lagunillas production was less than noted in October compared with September, but the slump gives confirmation to the logic that Europe's war has drawn severe restrictions around marine consumption. The quality of Lagunillas oil makes it particularly suited for production of residual types of fuel which make up the bulk of consumption by marine traffic.

The Cabimas, Tia Juana, Mene Grande and Socororo fields scored modest gains but the other 20 producing areas declined. The new Leona field opened by Mene Grande Oil Co. east and a little north of Oficina, in the State of Anzoategui, was withdrawn from production in November. The field produced 2,105 bbl. in October, probably in preliminary testing operations. There was a relatively unimportant decline of about 100 bbl. daily in the November production from Oficina, eastern Venezuela's most important high-gravity oil field.

The November production figure of 437,665 bbl. daily was the lowest for any month out of the first 11 in 1940.

Inauguration in December of movement of 10,000 bbl. daily through pipe lines crossing the northeastern part of the United States terminating in Canada may revive Venezuelan production. Most of the oil for this program will originate in Venezuela. International Petroleum Co., Ltd.'s ownership of a quarter interest in Mene Grande Oil Co. production indicates that the Oficina field will benefit especially from the new arrangement.

Details of November production in Venezuela are shown in the following tables. The figures in barrels were converted from reports in metric tons at the arbitrary factor of 6.703 bbl. per ton.

PRODUCTION BY COMPANIES

(All figures in barrels)

Company—	November	October
Caribbean Petroleum Co.	937,897	930,275
Venezuelan Oil Concessions, Ltd.	3,004,145	3,690,450
Colon Development Co.	411,591	455,610
Lago Petroleum Corp.	2,956,360	2,463,690
Mene Grande Oil Co.	3,432,921	3,540,710
British Controlled Oilfields, Ltd.	20,411	21,385
Central Area Exploitation Co.	50,326	51,245
Standard Oil Co. of Venezuela	2,290,536	2,582,945
Compania de Petroleo Lago	22,817	21,680
Socony-Vacuum Oil Co.	2,956	4,410
Total	13,129,960	13,762,400

PRODUCTION BY FIELDS

Field—	November	October
Cabimas	1,390,430	1,261,745
Lagunillas	2,845,068	3,286,000
Tia Juana	3,140,892	3,065,520
Bachaquero	177,817	193,060
La Concepcion	59,315	61,125
La Paz	42,631	41,660
Mene Grande	937,897	930,275
El Cubo	411,591	455,610
Cumarebo	46,707	73,635
Las Palmas	2,138	2,145
El Mene de Mauroa	20,410	21,385
Hombre Pintado	50,326	51,245
Quiriquire	1,591,760	1,723,615
Pedernales	136,084	144,940
Temblador	323,808	340,860
Oficina	1,530,295	1,562,390
Jusepin	224,363	331,870
Santa Ana	791	6,120
San Joaquin	120,580	122,740
El Roble	71,139	77,985
El Tigre	1,662	1,520
Guario	2,956	4,410
Socororo	1,300	440
Leona	.....	2,105
Total	13,129,960	13,762,400

EXPORTS BY COMPANIES

Exports by companies—	November	October
Caribbean Petroleum Co.	183,448	186,500
Venezuelan Oil Concessions, Ltd.	2,599,195	3,642,290
Colon Development Co.	410,968	460,025
Lago Petroleum Corp.	2,243,548	1,607,010
Mene Grande Oil Co.	3,283,103	3,504,845
British Controlled Oilfields	59,603	67,015
Standard of Venezuela	1,278,524	1,400,440
Total	10,058,389	10,868,125

Diesel Lubrication Chief Topic At S. A. E. Convention

(Continued from Page 32)

It is believed that the benefits obtained by the use of the detergent-disperser-inhibitor additive can be ascribed to three effects:

1. The additive disperses and holds solid particles of deterioration and contamination products in suspension in the oil and thereby prevents their deposition on engine parts as sludge, varnish and ring-zone carbon.

2. It retards the deterioration of the oil and the consequent formation of products corrosive to copper-lead and similar bearings, as well as substances otherwise objectionable.

3. It increases the adhesion of the oil to the metal parts of the engine, thus helping the lubricant resist displacement by heavy rubbing loads, high temperatures and corrosive vapors and as a result it reduces engine wear.

Operating Conditions

In the use of any lubricant, practical operating questions arise as to oil-change practice, the use of filters, etc. Since the answers are to a large extent determined by service conditions which do not lend themselves to quantitative expression, recommendations must necessarily be indefinite. However, a discussion of the factors involved may help to clarify the problem.

Oil-Change Practice

Conventional lubricants appear to deteriorate largely through the progressive chemical destruction of the bulk of the oil and hence their loss in performance is quite often largely proportional to their length of service. In additive-containing oils, the deterioration of both the oil and the engine is retarded by the additive to provide the superior performance noted. However, during operation, the power of the additive may be gradually exhausted and better results are therefore obtained if the oil is replaced regularly before the effectiveness of the additive is wholly spent. Consequently, for optimum performance a sound oil-change practice is even more important with additive blends than with conventional oils.

Makeup Requirements

Makeup oil, used to replace that consumed, may also have an important bearing on engine performance. The makeup oil helps to replenish the supply of additive and to renew the dispersing, stabilizing and wear-reducing properties of the lubricant.

Diesels for Navy

With specific reference to the application of diesel engines to the Navy, Lt. Comdr. M. M. Dana, in charge of the internal-combustion-engine section of the Navy, said: "The light-weight, high-speed diesel engine needed by the Navy differs but little from the automotive engine." From this statement it became evident that the work automotive engineers were doing and the earlier discussion of their diesel-engine lubricating problems would also apply to the Navy demands.

New Instruments

The meeting was characterized by the discussion of a large number of new measuring instruments. A. E. Traver and W. S. Mount, of Socony-Vacuum Oil Co., Inc., presented a method for determining the ignition lag on a diesel engine. The procedure involves the use of the coincident flash and meter instrumentation and its application to the refiner's problem is best summarized by the authors' statement which follows in part:

"Where the measurement of ignition lag is principally one of engine design there is no doubt that the engine indicator drawing a complete curve of combustion cycle is the most direct method for measurement of ignition lag. If, on the other hand, the problem is one of measuring small differences between diesel fuels, an ignition-lag meter of some kind is indispensable. This problem is more apparent to petroleum refiners because of the necessity for measuring small changes in ignition quality of fuels."

Other important and practicable contributions toward the more accurate and speedier determination of engine characteristics and performance were presented by L. W. Griffith and E. R. Willerth, of Shell Oil Co., who described two devices, one a conical mirror to be used in photographing the deposits on the intake ports of a two-stroke cycle diesel, and the other a simplified strobotachometer for determining engine speed. P. H. Schweitzer, of Pennsylvania State College, then described the use of the oscillograph for checking the fuel-injection effectiveness of a motor design and illustrated his discussion with many simplified but complete drawings of the equipment and results.

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Private Custody of Petroleum Resources Draws Acclaim

(Continued from Page 20)

tions was a unique departure. William P. Steven, of Tulsa, managing editor of the Tulsa Tribune, served as moderator of the panel. Questions were prepared from the layman's viewpoint and the answers were intentionally simplified on the assumption that many in the audience were unacquainted with functions of the industry.

Joseph H. Benton, Metropolitan Opera Co. tenor and a native of Oklahoma, rearranged his tour to entertain the Kansas-Oklahoma division out of personal friendship for Mr. Mapes. A male chorus of 60 Tulsans under the direction of Harry Evans presented two patriotic selections.

Gov. Leon C. Phillips of Oklahoma, chairman of the Interstate Oil Compact Commission, and J. C. Hunter, of Abilene, Tex., president of the general Mid-Continent association and Texas representative on the Interstate Commission, were among those at the speaker's table presented by Mr. Herndon.

Robert S. Kerr of Oklahoma City, Okla., left, president of the Kansas-Oklahoma division and of Kerlyn Oil Co., conferring with Clarel B. Mapes, Tulsa, secretary-treasurer of the association

Exports to British Empire Off 40 Per Cent Due to War

(Continued from Page 26)

list entirely in November while motor-fuel imports were but 18 per cent; kerosene, 57 per cent, and lubricating oils, 70 per cent of those of the first month of the war. In November, the United Kingdom imported more lubricating oil than any other petroleum product from the United States.

Australia was third among the divisions of the empire in importing United States petroleum products in November, taking 129,113 bbl., including 1,252 bbl. of crude oil. Motor-fuel imports were 69,455 bbl., not greatly under the September 1939 total, but lubricating-oil imports, the second major United States oil product imported from the standpoint of volume, were down to 34,789 bbl., half of what they were in the first month of the war.

South Africa Boosts Imports

The Union of South Africa was the only other division of the empire to import United States petroleum products in quantities exceeding an average of 1,000 bbl. per day in November. The union took 65,139 bbl. of oil products, 33,268 bbl. of which were lubricating oils and 31,871 bbl. of which were motor fuel. This was a marked change from the first month of the war when motor-fuel imports from the United States were treble and lubricating oils were approximately one third of those of last November.

The remainder of our petroleum trade with the British Empire is conducted with more than a score of its divisions, ranging from nearby Bermuda to faroff New Zealand. Half of the purchasers imported only lubricating oils, in quantities ranging from 60 bbl. which went to British possessions in South Africa outside the union, to 4,059 bbl. which went to Hong Kong. The bulk of British India's oil imports, 19,502 bbl., in November was also lubricating oil, 16,347 bbl. The same is true of New Zealand, which took 18,358 bbl. of United States petroleum products, 17,058 bbl. of which were lubricating oils.

Our petroleum exports to all foreign countries dropped from 16,729,937 bbl. in September 1939 to 8,515,958 bbl. in November 1940, a drop of almost 50 per cent. Of our remaining foreign market the British Empire represented 44 per cent in November 1940, whereas it represented 38 per cent of the export market we had in the first month of the war.

The major single item in all petroleum exports to the British Empire is crude oil, which dropped 35 per cent from the first month of the war. Crude oil suffered the least, proportionately, with the exception of lubricating oils which declined 33 per cent and residual fuel which dropped 27 per cent. Kerosene exports to the empire fell 43 per cent and gas-oil and distillate fuel-oil exports, 77 per cent. Aviation gasoline showed the only gain, rising 370 per cent.

Accompanying tables show our exports to the various divisions of the empire, the products which are exported and the percentage of the export market for each which the empire represents. Only the major products are included since the others represent only about 2 per cent of all exports.

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Colored Gasoline for Alberta

EDMONTON, Alta. — Effective January 1, Alberta discontinued the coupon system and introduced the sale of purple gasoline for farm purposes only at a special tax rate of 1 cent per gallon, in place of the normal 7-cent tax.

No soothing syrup

Not for years has heavy fuel oil been so stiff marketwise as it is today in the Mid-Continent—
CHICAGO JOURNAL OF COMMERCE, Dec. 14, 1940

Fuel oil is a welcome tonic just now for refiners, especially those that can't make very good gasoline—it's a shot in the arm

But it's bad if you take it for a soothing syrup

Even though fuel oil is strong now, please don't forget that good gasoline is the most important large volume product you can make

Dubbscracking is the way to make the biggest yield of anti-knock gasoline from every barrel of crude you run—and superior quality fuel oil, too

And other new processes take up where Dubbscracking leaves off and go on from there Any or all of these are available to you through Universal

Why don't you ask us about them?

Universal Oil Products Co
Chicago, Illinois

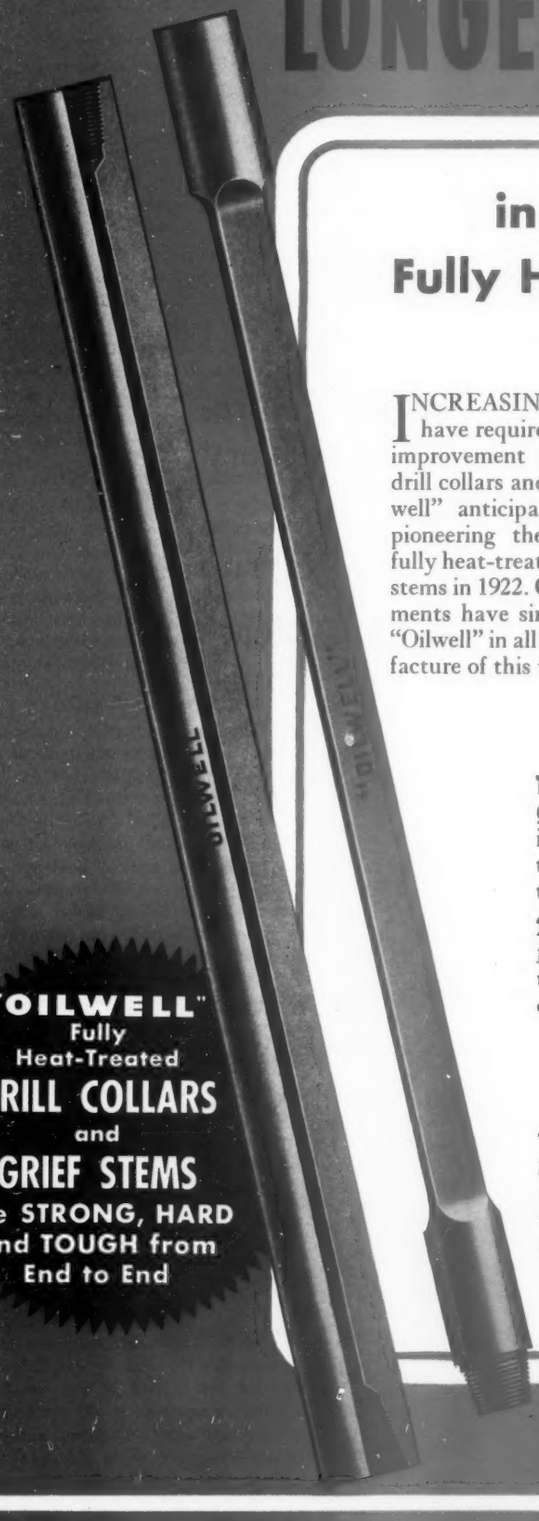
Dubbs Cracking Process
Owner and Licensor

LONGEST EXPERIENCE

in the Manufacture of Fully Heat-treated Drill Collars and Grief Stems

INCREASING drilling strains have required a corresponding improvement in the quality of drill collars and grief stems. "Oilwell" anticipated this need by pioneering the manufacture of fully heat-treated drill collars and stems in 1922. Constant improvements have since been made by "Oilwell" in all steps of the manufacture of this type (Grade "A") and also the regular heat-treated type (Grade "NA").

Close supervision and careful inspection start with the selection of controlled fine-grain, alloy-steel billets and continue through all forging, heat-treating and machining operations. Joints are accurately aligned. Bored circulation holes are straight, true, smooth. Wall thicknesses are uniform.



"OILWELL" Fully Heat-Treated DRILL COLLARS and GRIEF STEMS are STRONG, HARD and TOUGH from End to End

HEAT-TREATMENT

1. Grade "A" . . . *Fully Heat-treated (Normalized, Quenched and Drawn) over the entire length,* resulting in tool-joint strength, hardness, and toughness from end to end. This is a premium grade, providing an extra factor of safety for the most exacting requirements.

2. Grade "NA" . . . *Fully normalized body with fully heat-treated ends.* This grade is of first quality, entirely satisfactory for most operations. Collars and stems of this grade are sometimes classified as fully heat-treated.

SIZES

"Oilwell" Heat-treated Drill Collars and Upset Grief Stems are made in all regular A.P.I. sizes and also in accordance with customers' specifications in lengths up to 55 feet. Fully heat-treated subs are available for making up tandem strings. Send for new Bulletin No. 150-B.

OIL WELL SUPPLY COMPANY

Branch Stores in All Oil Fields
United States Steel Corporation Subsidiary

Refinery Expansion

Work Proceeding on Continental Refinery at Lake Charles, La.

LAKE CHARLES, La. — Construction of Continental Oil Co.'s new refinery at West Lake, 3 miles west of here, is well under way with plans calling for its completion about April 1. Work on the new plant has been greatly slowed by heavy rains during past months. Refining facilities under construction include an 8,000-bbl. skimming unit, 4,000-bbl. cracking unit, a polymerization unit and alkylation unit, and stabilization and fractionation equipment. A 100,000-bbl. natural-gasoline storage tank has been completed and is now being filled. Butane and propanes will be separated from the natural as charging stock to the polymerization and alkylation units.

At its Ponca City, Okla., refinery Continental is constructing a catalytic reforming unit and polymerization plant. A new solvent treating and dewaxing plant was placed in operation late in 1940.

Pure Adding Poly Units At Two Refineries

Pure Oil Co. now has under construction a thermal type polymerization unit at its Smith Bluff (Nederland), Tex., refinery, and at its Cabin Creek, W. Va., refinery a catalytic poly unit is being installed. Recent work at the latter refinery has increased its crude capacity to 4,200 bbl. daily.

At its Muskogee, Okla., refinery, which has been shut down for the past 3 years, the company is dismantling certain crude and cracking equipment and transferring it to the refineries at Toledo, Ohio, and Cabin Creek.

Snow Cap Dismantling Skimming Plant at Sunburst, Mont.

BUTTE, Mont.—Snow Cap Oil Co., which operates a 400-bbl. skimming plant at Sunburst, Mont., has announced that the company is going out of business and is dismantling the plant. The Snow Cap company is owned by Adam J. Eulberg of Sunburst.

Sunray Operating New 500-Bbl. Cracking Unit at Allen

Sunray Oil Co., Tulsa, recently completed installation of a 500-bbl. cracking unit at its Allen, Okla., refinery to increase the cracking capacity of the plant to 4,000 bbl. daily. Operations of the plant, which has a crude capacity of 8,200 bbl. daily, are now being carried on at an increased rate.

Petroleum Utilities Adds Leading Plant at Nebraska Refinery

OMAHA, Neb.—Petroleum Utilities Co., Inc., operating a 750-bbl. skimming plant at Chadron, Neb., recently placed in operation a weight-tank type lead blending plant at its refinery. The company, of which C. F. Harshfield is president, is planning installation of a cracking unit some time this year. C. L. Eleson is general superintendent of the company.

North Star Installs Skimming and Cracking Units at St. Boniface

WINNIPEG, Man. — North Star Oil, Ltd., recently completed and placed in operation a new 2,500-bbl. topping unit and 650-bbl. Dubbs cracking unit at its refinery near St. Boniface, Man. Provisions in the cracking unit will enable it to later be enlarged to 1,100 bbl. daily. Also involved in the enlargement program was the construction of a complete stabilization and absorption plant, treating equipment, and new tankage. Work was done by the Canadian-Brown Steel Tank Co., Ltd., and Born Engineering Co. of Tulsa. T. N. Clayton is vice president and general manager of the North Star company, and Carl Johnston is superintendent. The plant is processing Turner Valley crude oil.

Deep Rock Reorganization Plan Approved by Court

WICHITA, Kans.—The tenth Circuit Court of Appeals on Monday approved a proposed plan for reorganization of the Deep Rock Oil Corp. which had been accepted by the federal court of the northern district of Oklahoma. Reorganization of Deep Rock, a $16,000,000 concern, was sought under Section 77-B of the bankruptcy law. The plan was opposed by Standard Gas & Electric Co., one of the creditors, which appealed. Judge Sam G. Bratton read the opinion, which held the reorganization plan was "fair and equitable."

The action of the court in upholding the reorganization plan which Henry N. Greis, trustee, prepared, followed approval by federal Judge Franklin Kennamer of Tulsa. It is expected that Standard Gas & Electric Co. will appeal the ruling to the Supreme Court, and if Deep Rock is upheld in that court all obstacles to its functioning as a corporation will be removed.

Humble Starts Initial Work On Baytown Toluene Plant

HOUSTON, Tex.—Work has been started on construction of three barracks and a mess hall at the site of Humble Oil & Refining Co.'s $12,000,000 toluene plant near its Baytown, Tex., refinery. Tellepsen Construction Co. was awarded contract for this work.

Several contracts have been awarded toward construction of the plant which will be completed in about a year. The Austin Co., engineering and building firm, has contract to construct a two-story building to barrel oil. It will be made of steel and brick and will cost approximately $200,000, which will include equipment. S. W. Gaylord Co. has been awarded contract for the road work, sewer installations, railroad tracks, and improvement of site. Cost will be in the neighborhood of $15,000. A $30,000 contract to tie up the big toluene plant and the refinery was awarded to Brown & Root, Inc.

Also in the building program is a two-story masonry office building expected to cost around $75,000. Bids were received from three companies for the job. Humble was to release plans and specifications this week for bids on a refinery warehouse. It will cost about $300,000.

A.S.T.M. Issues Viscosity-Index And Conversion Tables

Two tables recently published by the American Society for Testing Materials are of interest particularly in the field of petroleum products and lubricants; the pamphlets include viscosity-index tables and conversion tables for kinematic and Saybolt viscosities and provide in durable and convenient form data which are widely used. Each table is based on and amplified from the respective A.S.T.M. standard methods. The tables were originally compiled by the Standard Oil Development Co.

The index tables provide convenient references to the viscosity index, which is an empirical number indicating the effect of change of temperature on the viscosity of an oil. The index calculated from basic Saybolt Universal viscosity is tabulated against Saybolt at 100 seconds under Saybolt values at 210° F. for 40 seconds to 161 seconds. The viscosity-conversion tables afford a quick conversion from kinematic to Saybolt Universal viscosity. The tables range from 2.00 to 330.0 centistokes (32.60 to 1,524.6 Saybolt seconds at 100° F.) by increments of 0.01, 0.02, 0.10, and 0.20 depending on the range. Saybolt equivalents at 210° F. are given for a centistoke range of 2.00 to 75.0. Copies of the above are available from A.S.T.M. headquarters, 260 South Broad Street, Philadelphia, Pa.

News of Pipe-Line Activity, which was formerly found on this page, will be found on Pages 62-63.

Falcon Adding Ethyl Plant At Great Bend Refinery

WICHITA, Kans.—Falcon Refining Co. expects to place in operation a new Ethyl blending plant at its Great Bend, Kans., refinery about January 15. The new plant will enable the company to produce a leaded gasoline of high-octane value. Capacity of the skimming-type plant is 2,000 bbl. daily.

Continental Dismantling Plant at Albuquerque

ALBUQUERQUE, N. M.—The 625-bbl. skimming plant of Continental Oil Co., which has been in operation here for the past decade, is being dismantled and junked. It was supplied with crude from the Rattlesnake field, with a pipe line to Gallup and by tank car to Albuquerque. Owing to lack of oil the pipe line has been discontinued.

Expansion Program Completed At Three Rivers Refinery

HOUSTON, Tex.—Three Rivers refinery recently completed an enlargement program at its refinery located at Three Rivers, Tex. Skimming capacity of the plant was increased from 700 to 2,500 bbl. per day, and other modernization work was done. The company is headed by Henderson Coquat, with Ralph Robinson being general manager of refining.

Natural Gasoline

Stanolind Planning Recycling Plant for South Jennings Pool

NEW ORLEANS, La.—Stanolind Oil & Gas Co. proposes to incorporate recycling in the South Jennings field of Jefferson Davis Parish, South Louisiana. At a hearing before Conservation Commissioner B. A. Hardey and J. L. McHugh, who will head the newly organized Minerals Department, the company discussed plans for the project. The plant and gathering and injection system for the 1,900-acre field will cost approximately $500,000. Three sands are productive of oil, gas, and condensate in the field, and six wells are now on production.

Propane Distributing Plants Being Installed in Three Montana Cities

BUTTE, Mont.—Glacier Production Co., which operates a 15,000-gal. natural-gasoline plant at Cut Bank, has announced the establishment of propane distribution plants at Butte, Great Falls and Missoula, Mont. The Butte plant will have 60,000-gal. storage capacity, the Great Falls plant 30,000 gal. and the one at Missoula 15,000 gal. The primary purpose of the plants will be for distribution of bottled gas, however, the Butte plant will serve as a standby supply for the Butte-Anaconda gas system. Sale of liquefied petroleum gas in Montana up to this time has not been pushed due to lack of adequate distribution systems.

PROGRAMS AND MEETINGS

Pacific Coast Gas Association Names Meetings Dates

The annual spring sales conference of the sales and advertising section, Pacific Coast Gas Association, is announced for March 6-7, at San Francisco. C. P. de Jonge, chairman of the technical session, has made it known that the spring technical conference will be held March 27-28, in Los Angeles. The program will consist of discussions on the newest methods in gas engineering under the section's committee chairmen, J. F. Sauer, distribution; M. L. Fort, production; H. P. George, transmission, and John Mueller, utilization. Programs for each meeting will be mailed to members about 2 weeks before the event.

Los Angeles A.P.I. Production Division Holds Meeting

The Los Angeles Basin chapter of the Division of Production, American Petroleum Institute, held a meeting Tuesday night in the Shell Oil Co. recreation hall, Long Beach, Calif. The program included a round-table discussion of practical production problems by W. J. Larson, Union Oil Co.; Fred Miller, Continental Oil Co.; J. F. Gilstrap, California Production Service Co.; Paul Andrews, Signal Oil & Gas Co.; A. F. Wilson, Standard Oil Co. of California; and W. A. Werts, Hall-Baker Co. Glen Ruby, formerly chief geologist of Y. P. F., Argentina, gave a talk on his experience in Argentina, where he spent 3 years.

A.P.I. Program at Shreveport Nearing Completion

Program and plans are nearing completion for the regular spring meeting of the southwestern district, American Petroleum Institute, to be held in Shreveport, La., February 27-28. The latest and most advanced production-engineering developments and national defense will be topics covered in the two general sessions. A dinner dance and other entertainment features are being planned. L. Moseley Moffitt, Triangle Drilling Co., is chairman of the meeting.

N.P.A. Selecting Speakers for Cleveland Meeting in April

The semiannual meeting of the National Petroleum Association will be held in Cleveland, Ohio, April 24-25. This is the thirty-eighth semiannual meeting of this organization. Speakers are now being selected. As usual there will be meetings of the traffic, manufacture and other departments of the association. It is pointed out that Easter Sunday this year falls on April 13, and the meeting dates were selected in order that they would not conflict with school holidays at Easter.

Arkansas to Celebrate 20 Years As Oil-Producing State

El Dorado and Union County, Arkansas, have taken another step toward formulating plans for a celebration at El Dorado, marking the twentieth anniversary of the first commercial oil well in the county, and on a large scale, in the state. Civic and business leaders met at the Chamber of Commerce and outlined a proposal for a celebration to be held this spring.

Illinois-Indiana Oil Group to Meet In Robinson, June 7

The ninth annual Petroleum Conference of the Illinois-Indiana Petroleum Association will be held in Robinson, Ill., June 7, according to word from Lee Mulvihill, executive secretary of the group. Announcement of the program will be made later.

Meet to Make Plans for Legislation Creating New Oil and Gas Commission

Representatives of several independent oil associations met at Dallas, Tex., last week to make final plans to support legislation creating a new oil and gas commission to regulate the industry in Texas. Former State Senator Clint C. Small, Austin, said the meeting, of which he was spokesman, was something of a final rally before the actual work starts.

CALENDAR OF EVENTS

January

LIQUEFIED PETROLEUM GAS ASSOCIATION, eastern section, regional meeting, New York, January 16-17.

COMPRESSED GAS MANUFACTURED GAS ASSOCIATION, INC., annual meeting, New Nork, January 20-21.

OIL TRADES ASSOCIATION OF NEW YORK, quarterly meeting and dinner, Waldorf-Astoria Hotel, New York, January 21.

NORTHWEST PETROLEUM ASSOCIATION, Radisson Hotel, Minneapolis, Minn., January 23-24.

February

WISCONSIN PETROLEUM ASSOCIATION, annual convention, Milwaukee, Wis., February 11-13.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Engineering Societies Building and Commodore Hotel, New York, N. Y., February 17-20.

KENTUCKY PETROLEUM MARKETERS ASSOCIATION, fifteenth annual meeting and convention, Brown Hotel, Louisville, Ky., February 18-19.

NORTH TEXAS OIL AND GAS ASSOCIATION, Wichita Falls, Tex., February 22.

LIQUEFIED PETROLEUM GAS ASSOCIATION, INC., annual convention, Chicago, February 24-25.

AMERICAN PETROLEUM INSTITUTE, southwestern district regular spring meeting, Washington-Youree Hotel, Shreveport, La., February 27-28.

March

AMERICAN SOCIETY FOR TESTING MATERIALS, Hotel Mayflower, Washington, D. C., March 3-7.

OHIO PETROLEUM MARKETERS ASSOCIATION, Deshler-Wallick Hotel, Columbus, Ohio, March 4-6.

PACIFIC COAST GAS ASSOCIATION, annual spring sales conference, sales and advertising section, San Francisco, Calif., March 6-7.

NATIONAL DIXIE DISTRIBUTORS, INC., Fort Worth, Tex., March 10.

AMERICAN PETROLEUM INSTITUTE, Pacific Coast District, Division of Production, regular spring meeting, Biltmore Hotel, Los Angeles, Calif., March 11.

INDIANA INDEPENDENT PETROLEUM ASSOCIATION, spring convention and refiners' and suppliers' exhibit, Hotel Severin, Indianapolis, Ind., March 11-13.

OKLAHOMA UTILITIES ASSOCIATION, annual meeting, Tulsa, March 17-18.

OIL BURNER INSTITUTE'S NATIONAL OIL BURNER PROGRESS EXHIBITION, Commercial Museum, Philadelphia, Pa., March 17-22.

MID-CONTINENT CHAPTER, AMERICAN PETROLEUM INSTITUTE, spring convention, Amarillo, Tex., March 21-22.

OIL TRADES ASSOCIATION OF NEW YORK, annual meeting, Waldorf-Astoria Hotel, New York, March 25.

PACIFIC COAST GAS ASSOCIATION, annual spring technical conference, technical session, Los Angeles, Calif., March 27-28.

April

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, twenty-sixth annual meeting, Rice Hotel, Houston, Tex., April 2, 3, and 4.

AMERICAN CHEMICAL SOCIETY, St. Louis, Mo., April 7-11.

MIDWEST POWER CONFERENCE, fourth annual meeting, Palmer House, Chicago, April 9-10.

SOUTHWESTERN GAS MEASUREMENT SHORT COURSE, College of Engineering, Oklahoma University, Norman, Okla., April 15-17.

WESTERN PETROLEUM REFINERS ASSOCIATION, annual meeting, Arlington Hotel, Hot Springs, Ark., April 16-18.

AMERICAN PETROLEUM INSTITUTE, eastern district, Division of Production, regular spring meeting, William Penn Hotel, Pittsburgh, Pa., April 17-18.

NATURAL GASOLINE ASSOCIATION OF AMERICA—Annual convention, Baker Hotel, Dallas, Tex., April 23-25.

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, Mayo Hotel, Tulsa, April 23-25.

NATIONAL PETROLEUM ASSOCIATION, semi-annual meeting, Hotel Cleveland, Cleveland, Ohio. April 24-25.

May

PETROLEUM AND NATURAL GAS CONFERENCE, State College, Pa., May 2-3.

AMERICAN GAS ASSOCIATION, Natural Gas Section, Dallas, Tex., May 5-8.

AMERICAN PETROLEUM INSTITUTE, eleventh midyear meeting, Mayo Hotel, Tulsa, May 19-23.

NATIONAL OIL SCOUTS AND LAND MEN'S ASSOCIATION, annual convention, Dallas, Tex., May 29-31.

June

ILLINOIS - INDIANA PETROLEUM ASSOCIATION, ninth annual petroleum conference, Robinson, Ill., June 7.

AMERICAN SOCIETY FOR TESTING MATERIALS, forty-fourth annual meeting, Palmer House, Chicago, June 23-27.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, annual meeting of Petroleum Division, Kansas City, Mo., June 16-20.

September

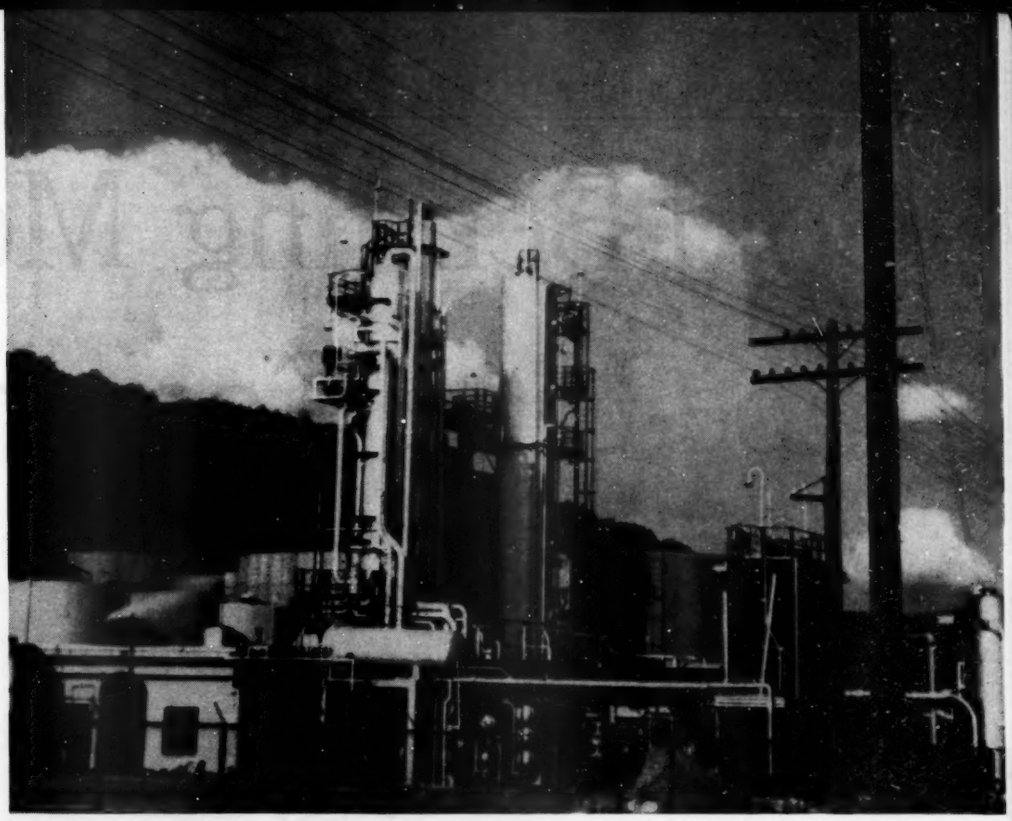
AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, East Texas chapter, annual convention, Adolphus Hotel, Dallas, Tex., September 25-27.

October

AMERICAN GAS ASSOCIATION, twenty-third annual convention, Atlantic City, N. J., October 20-25.

November

AMERICAN PETROLEUM INSTITUTE, twenty-second annual meeting, San Francisco, Calif., November 3-7.



Improvements in engines, fuels, and roads require that lubricating oils should be able to lubricate the engines under the heavy-duty service conditions that are becoming more common. To meet these requirements it is necessary that the oils be properly refined. Here is shown a new phenol-extraction plant completed at Kendall Refining Co.'s refinery at Bradford, Pa., which is satisfactorily processessing a wide range of charging stocks. (Story on this new plant begins on Page 48.)

ENGINEERING & OPERATION

In This Section

JANUARY 16, 1941

COLD-BENDING METHODS IN PIPE-LINE CONSTRUCTION
By Paul Reed ..... Page 42
Use of cold-bending methods is being more widely adopted by contractors, both in laying of small lines and on pipe over 12 in. in diameter. In order to reduce time required for making the bends, the costs involved or the size of the bending crew, several methods have been devised.

TREATMENT OF DRILLING FLUID TO OVERCOME DIFFICULTIES
By Harry F. Simons ..... Page 45
In normal drilling where no trouble is anticipated, mud can be kept at a weight and viscosity which permit maximum rate of penetration with least danger. To overcome blowouts, caving, water loss, sticking of drill pipe, or other difficulties, special treatment of the fluid is required.

REFINING PENNSYLVANIA LUBE OILS BY PHENOL EXTRACTION
By D. W. Kenny and W. B. McCluer ..... Page 48
At its Bradford, Pa., refinery Kendall Refining Co. is operating a phenol-extraction plant designed to handle 1,500 bbl. of oil and 1,400 bbl. of phenol daily. Features of the plant and its operation are described and data on finished products given.

HOT-ACID TREATING IS LATEST ACIDIZING DEVELOPMENT
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Introduction of hot acid into a formation has been made possible by a new acidizing technique in which the heat of reaction of magnesium and hydrochloric acid is utilized. Temperature to which the acid is heated is regulated by the amount of magnesium used, or by the pumping rate.

WATER INJECTION IN OIL-PRODUCTION OPERATIONS OF SOUTHEAST KANSAS
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Three different types of operations employed in Greenwood County, Kansas, for dealing with water injection carried on in connection with production of oil are described.

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Cold-Bending Methods in Pipe-Line Construction

By PAUL REED

SEVERAL changes in the methods used for cold bending in pipe-line construction have been devised and tested in the field during the past year and a half. Although descriptions of some of these methods have been published in articles on different projects, it seems appropriate that, because of their variety, they should be grouped together for consideration in one article.

In discussing the subject in a general way before considering the practices separately, mention should be made of the noticeable increase in the use of cold bending of pipe. Although a considerable amount of hot bending is done on pipe in sizes larger than 12-in., there is a tendency toward doing more and more cold bending of pipe of these larger sizes. This has been made possible by the fact that heavy tractors of the types built in recent years are available.

Taking advantage of what can be done with modern tractor equipment, some contractors have given special attention to developing procedures for cold-bending large pipe with less expenditure of time and money. While these practices contribute toward increasing the profits of the contractor, at the same time, cold bending has advantages for the pipe-line company. In the construction of a recent project of a major natural-gas pipe-line organization, the value of cold-bent pipe for an operating system was recognized during the construction of the first section of the line laid in the expansion program which the company has undertaken. As a result, company officials made a point of requiring cold bending when specifications were written for the construction of the second section of the line.

In the construction of this project, cold bends were made with no bend more than 15°-20°. Several bends must be made to produce more acute bending. With long-radius bends, friction in the line is less and, as a result, flow conditions in the pipe are improved. In addition to the contribution which modern tractor equipment has made to successful cold bending of large-diameter pipe, mention should be made that cold bending is facilitated by the fact that pipe mills now furnish large-diameter pipe with more uniform wall thickness. Furthermore, in recent years there has been a marked advance in the skill of pipe crews in handling large-diameter pipe.

In discussing cold-bending practices in this article, common practices will be reviewed as well as some of the innovations devised this year.

The pipe-bending method commonly used for bending pipe in sizes below 12 in. in diameter is what is known as bending over the ditch. To make a bend with this method, in stovepiping practice, the joint to be bent is laid in the ditch and a tractor is placed across the ditch on skids; between skid and pipe there is a bending iron or shoe. A line from the tractor boom is fastened to the pipe at a point where the desired leverage can be obtained. By operating the winch on the tractor, the tractor driver raises the pipe to make the bend required. During cold-weather operations in the Middle West last winter a special shoe was devised and put in use by Williams Brothers Co., which had an extension or cap on the top which helped to prevent buckling. The use of this type of shoe was continued through the summer (Fig. 1).

Fig. 2—Bending shoe attached to side of tractor; devised and fabricated by men in the organization of O. C. Whitaker Co. in the course of construction of Socony Vacuum Oil Co., Inc.'s gasoline and refined products line between Buffalo, Rochester, and Syracuse, N. Y.

Bending on the Ground

Bending is done, in a somewhat similar way, by a method known as bending on the ground. This has the advantage of being faster than bending over the ditch since it eliminates the operation of lifting the joint out of the ditch after bending. Time is saved by avoiding caving the walls of the ditch during bending which calls for hand labor to "crumb out" afterward. When crossing a ditch a tractor will cave some of the side wall. Since bending on the ground is usually done by running the tractor over the pipe on skids, there is always the danger that the tractor tracks will slip and knock a dent in the pipe.

In the construction of a recent 12-in. line by stovepiping for Lincoln Nebraska Gas Co., C. S. Foreman Co., the contractor, used special equipment which he devised for bending pipe of this size on the ground. This consisted of portable foundations for a platform over the pipe on which a tractor was placed to perform bending operations.

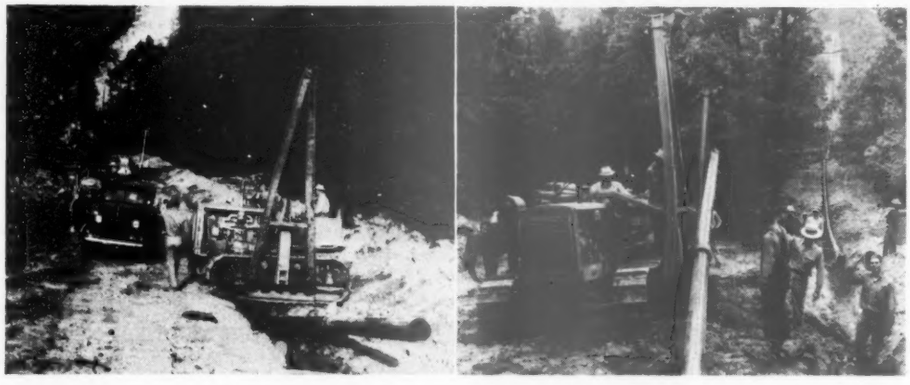


Fig. 1 (above)—Williams Brothers Co.'s operations in building line in western Pennsylvania for Manufacturers Light & Heat Co. Left: Bending with specially designed capped bending shoe under tractor. Right: Bending with belt

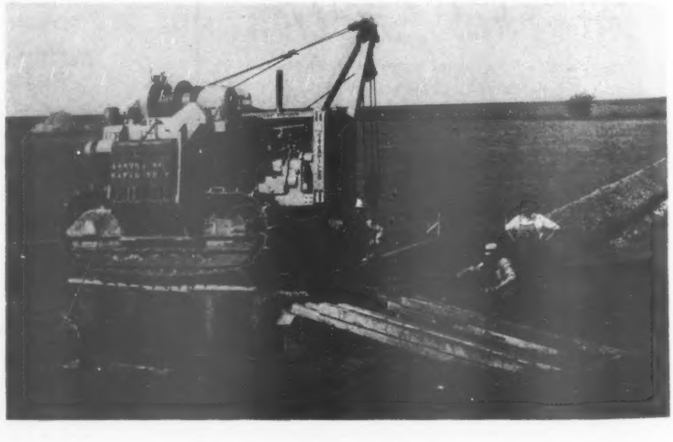


Fig. 3 (right)—Novel method for bending 12-in. pipe, used by C. S. Foreman Co. in construction of a natural-gas pipe line by the stovepiping method for Lincoln Nebraska Gas Co.

This foundation was made in two sections, each of which was placed alongside the pipe. Each section was made by welding nipples of large-diameter pipe to a steel plate. Provision was made for planks, forming a ramp on which the tractor could travel while going to and from the platform, which was also made of planks. On the side opposite the boom, the tractor was anchored to the pipe by a cable, while bending was done (Fig. 3).

A fast and satisfactory device for bending 6-in. pipe has been built by the organization of O. C. Whitaker Co., which recently constructed a 180-mile gasoline line for Socony-Vacuum Oil Co., Inc., in western New York, under the direction of J. C. Britton, general superintendent. The device, known as a bending shoe (see Fig. 2) was designed by R. G. Mott, pipe foreman. The shoe is held in position, under the apex of the tractor boom, by a frame which is braced so that the shoe may be held rigidly. The shoe itself is held to the frame by a pin; the pin allows the shoe to rotate freely so that it may fit smugly on the top of the pipe while the bend is made by the tractor's cable and winch. Use of this shoe makes it possible to have the work of the pipe gang done by one less man than is usually required.

In the building of the New York gasoline line.

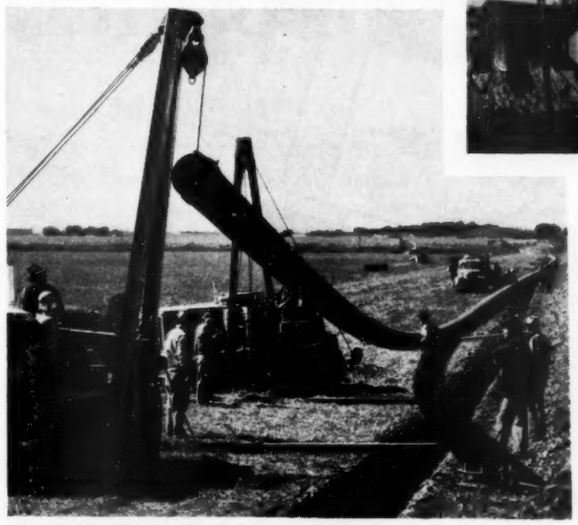
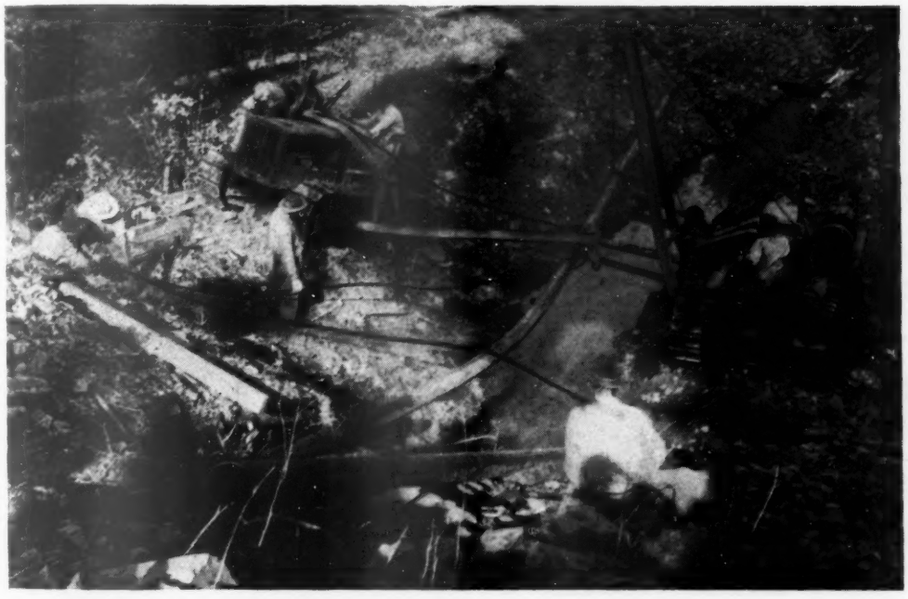


Fig. 4 (below)—Bending 6-in. pipe by an unusual method employed in the construction of Socony-Vacuum's gasoline line in New York. (To better illustrate the wire line the picture has been retouched)



work was done by two spreads. Only one of the spreads had a tractor equipped with this shoe. After the work was completed it was estimated that the special shoe attached to the tractor made it possible to save about 25 per cent of the time usually required. Those using this shoe have expressed the opinion that it could be adapted for bending 8-in., 10-in., and 12-in., with the use of a larger tractor and a double line.

On this job a bend was made at one point by an unusual method which was contrived by R. G. Mott to deal with a certain situation which confronted him. In this case the special bending shoe was not used. The place where the bend was made was at the bottom of a hill; the ditch was filled with water; the walls of the ditch had caved; ground on both sides of the ditch was rough. (See Fig. 4.) A wire line from the boom of one of the tractors ran through a snatch block anchored to a tree stump on the hillside on the same side of the ditch as the tractor; from the snatch block the line ran over the pipe and across the ditch to a stump where the end of the line was made fast. Across the ditch and opposite the tractor, just mentioned, was a second tractor. As the line of the second tractor raised the end of the pipe, the pipe was held by means of the line and boom of the first tractor, which had been placed so as to hold the pipe in a position where a bend of the shape required could be effectively and quickly made.

In the construction of the section of the 20-in. line for Natural Gas Pipeline Co. of America which lies between Geneseo and Belvidere, Ill., the Dempsey-Wilson Construction Co. followed its usual practice of roll-welding and cold-bending pipe of this size. This organization has given special attention to the requirements of cold bending and the training of crews to handle this branch of the work correctly. The usual practice of this organization is to bend the pipe on the ground alongside the ditch with two tractors as shown in Fig. 5.

In laying the line for the section of this project between Belvidere and the Wisconsin State line I. C. Little devised a method for bending single joints which were laid by the stovepipe method.

All bends were made as side bends on ground alongside the ditch. A special shoe was made which weighs more than 1,200 lb. This is carried by a light tractor which holds it against the pipe while two heavier tractors (one tied to each end)

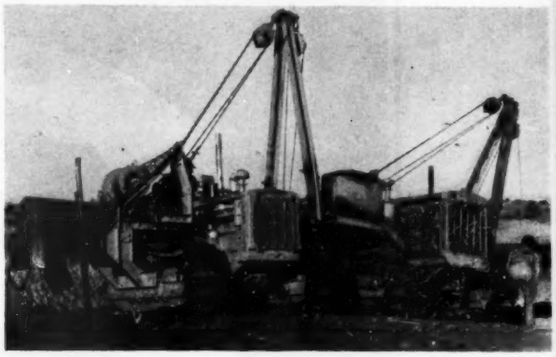


Fig. 5 (left)—Bending 20-in. pipe in construction of the Natural Gas Pipeline Co. of America line in Illinois by Dempsey-Wilson Construction Co. Fig. 6 (above)—The tractor on the left serves only to provide weight for ballasting the tractor on the right, which is making an over-bend on Northern Natural Gas Co.'s project built last year in Minnesota by C. S. Foreman Co.

make the bend. In making bends of this kind only a 15° bend was made in a single operation. A series of 15° bending operations are required to make larger bends. With this method a 45° bend has been made in 16 minutes.

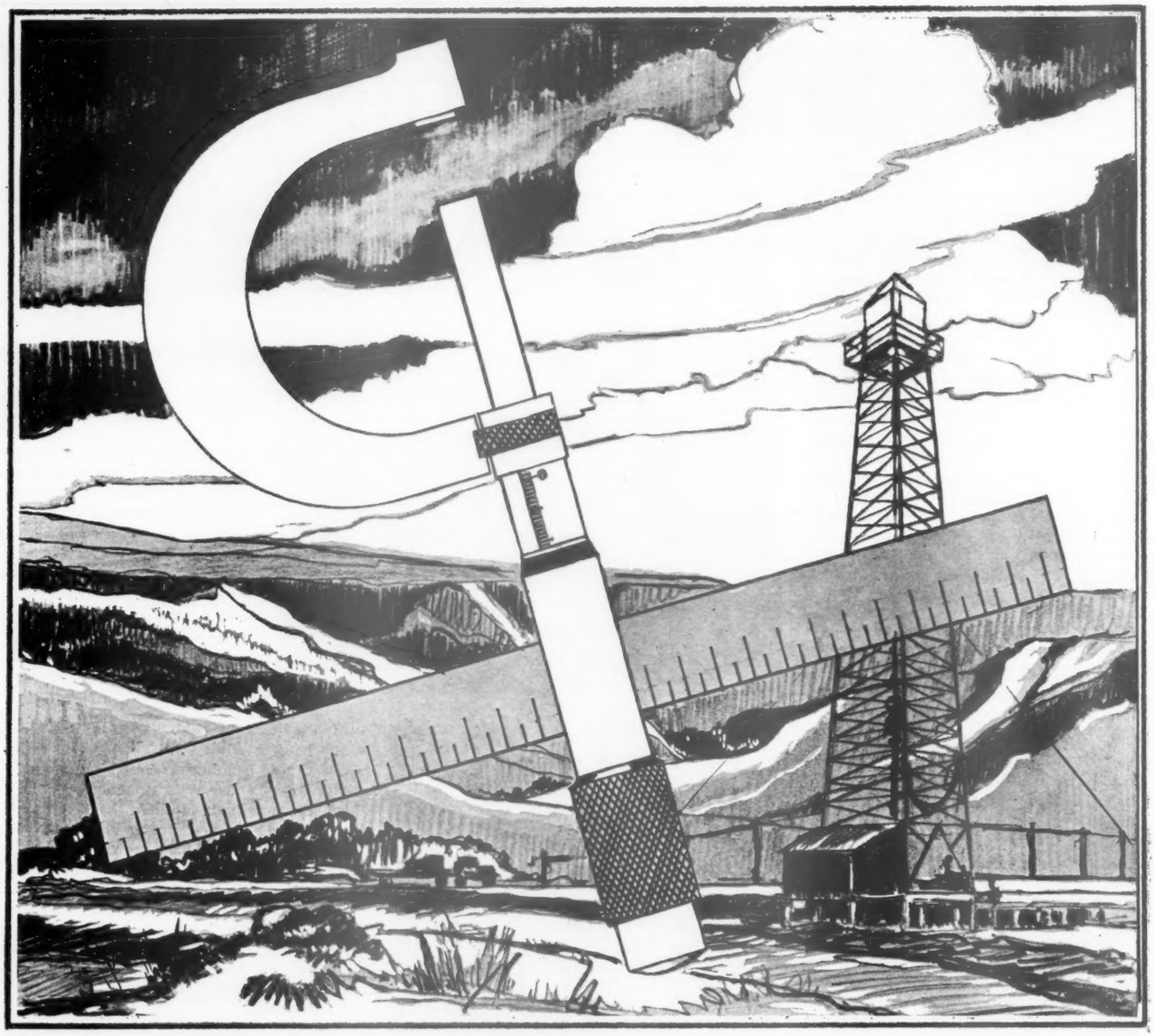
Bending with a belt is commonly done on jobs where the pipe is laid by the firing-line method. A bending belt consists of a 10 or 12-in. piece of belting about 8 to 10 ft. long, at each end of which there is a heavy steel triangle held by a loop. The belt is used so that one tractor holds the pipe, after it has been welded in a section, while a second tractor pulls to make a side bend.

It is reported that in the laying of a 6-in. line, the pipe furnished came to the job from the mill, coated and wrapped with paper. Bending was done by a single tractor which held the pipe by a belt. The belt was passed over the pipe and was held down by a big hook welded on the boom side of the tractor.

In the laying of the extension built for Northern Natural Gas Co. last year by C. S. Foreman Co., three and four tractors were used in the pipe gang for bending 24-in. pipe. Two of these tractors were used to provide weight which would hold the two tractors doing the bending so that they would not rise from the ground (Fig. 6).

In making a sag bend, one of the tractors ran alongside the pipe where the sag was to be made; the load line was passed underneath a bar, on the boom side of the tractor, and wrapped around the pipe two or three times. On the offside, this tractor was ballasted by the weight of an extra tractor. A tractor at the end of the section picked up the pipe with the load line to make the bend. The functions of the two tractors were transposed in making an overbend, for then the tractor at the end of the section held the pipe down while the other tractor picked up the pipe where the overbend was to be made. On this job most of the bending was done alongside the ditch.

Bending operations are an independent part of pipe-line construction work and it is sometimes possible to effect considerable savings in time and money by introducing changes, in the procedure commonly followed. These may result in getting the job done better, faster and more profitably for the construction organization.



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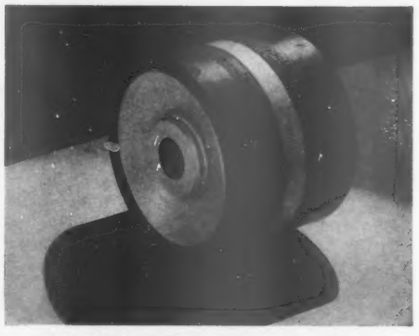

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Treatment of Drilling Fluid to Overcome Difficulties

By HARRY F. SIMONS

In this seventh and concluding article by the author on rotary drilling fluids, treatment of muds to overcome blowouts, caving, water loss, sticking of drill pipe and preparing hole for casing is described. Earlier articles of this series, dealing with the purpose of drilling fluids, surface and mechanical factors, effects of different properties, tests for determining properties, and admixtures and chemicals used, appeared September 26, October 10 and 31, November 21, December 12, 1940; and January 9 issues of The Oil and Gas Journal.

REGARDLESS of conditions encountered and the treatment employed, money will be saved and the risk of trouble reduced if a complete record of the condition of the drilling fluid is kept at all times. This will show the result obtained from the various chemicals and admixtures used and will give the drilling crew some indication of the procedure to be followed as similar circumstances arise.

In normal drilling, where no trouble is anticipated, the mud can be kept at the weight and viscosity which permit the maximum rate of penetration with the least danger. Values at which the weight and viscosity are maintained vary from field to field, and with depth within each field. The viscosity and weight which give the best drilling speed are the permissible minimum: if the drilling fluid is not full of inert material, a light mud having a weight of 9.2-9.5 lb. per gallon (69.0-71.2 lb. per cu. ft.) and a viscosity of 36 sec. A.P.I. may be satisfactory. Such a mud is easy to pump and will carry the cuttings out of the hole satisfactorily with the pumping equipment used on the average rig.

Difficulties which are encountered every day in all areas where drilling is in progress include: caving, loss of returns, sticking of drill pipe, high pressure, gas, water or salt-bearing formations, and high temperatures. In addition, special treatment must be given the mud while the well is in the process of completion, while coring, formation testing and fishing are in progress, and in the killing of wells which are about to get or have been out of control.

In treating mud all factors should be considered and no treatment attempted which will aggravate one trouble while attempting to cure another.

Caving

Shales and poorly consolidated formations often give trouble if the mud does not have a sufficiently high viscosity or specific gravity, or shows a high water loss. Small and large sections of the formation will fall into the hole, circulation of the drilling fluid will be impeded, the drill stem will bind and show a tendency to stall and trouble will be experienced coming out and going in the hole, particularly the latter.

The worst caving generally occurs near the top of the ground when almost clear water is being used for a drilling fluid. As the mud heavies due to picking up particles of the formation drilled through, much of the trouble with caving automatically stops. As the well gets deeper, other caving zones may be, and often are, encountered. The hole then becomes an alternating succession of enlarged sections opposite the caving formations with an in-gage hole opposite the harder formations. As the rate of flow and the power of the mud stream to carry solid particles is reduced in the washed-out zones, large quantities will collect there and will fall back down the hole when the pumps are shut down. Fortunately, these cuttings are generally easy to pump out.

Some zones which cave badly also include harder material which is thus freed to fall in the hole. These sometimes have sufficient hardness and size to wedge the drill stem and cause it to stall. If the trouble isn't remedied, the drill pipe may become stuck.

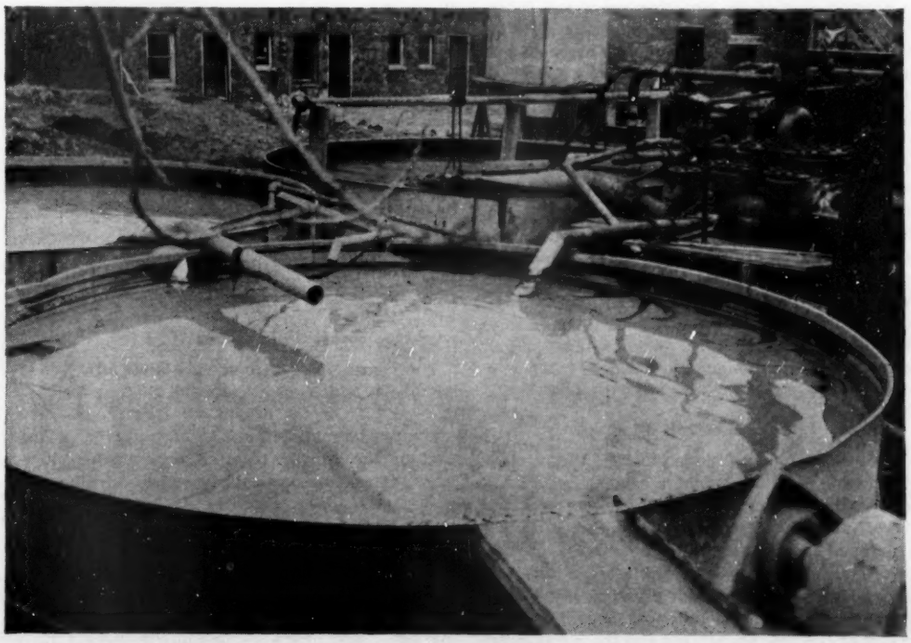
When this condition, or a similar one, is encountered, most drilling organizations increase the viscosity of the mud several seconds A.P.I. If the mud has been 37 sec. A.P.I. it is built up through the addition of bentonitic material to 39, 40 or 41 sec. It may also be heavied through the addition of barytes, iron oxide or amorphous silica to ½ lb. more per gallon (3.7 lb. per cu. ft.) than formerly. If the caving doesn't stop, more colloidal[4] and weighting material may be added.

The object of this treatment is three-fold. The formation is sealed off from the drilling fluid as the building up of the viscosity through the addition of the colloidal material also increases the wall-building properties of the mud. As the caving is generally caused by a swelling of the formation due to water coming in contact with it, this one source of the trouble is eliminated by better filtration characteristics of the mud. The increase in viscosity also carries the cuttings away faster.[5] Added weight of the drilling fluid will increase the pressure against the formation and help hold it in place.

After the trouble has been cured, it may be expedient to reduce both the weight and viscosity of the mud in order to speed up the drilling. It is very seldom that the mud is returned to the condition it is in when the caving started. About half way between the two may be safe. A mud with a greater specific gravity and viscosity is needed to stop caving than that required to prevent it. When caving formations are anticipated, the mud may be built up to values which will prevent sloughing and trouble eliminated before it is encountered. With a little experimentation in an area, the minimum specific gravity and viscosity for the drilling of each formation may be determined.

Loss of Returns

Most drillers use a device similar to a river gage for determining if mud is being lost into the formation. This may consist of a series of sticks driven into the bank of the pit or a board with pegs or other projections on it. By checking the level of the fluid in the pit, it is possible to determine when some formation starts taking



Bottom rings of 500-bbl. tanks used for mud pits on a 6,500-ft. well. The mud has a viscosity of 36 seconds A.P.I. and a specific gravity of 9.6 while drilling a shale section at 5,200 ft.

the mud. This may be called loss of circulation or loss of returns.

Some formations take mud slowly and it is impossible to tell without a check when mud is being lost. Other formations take the mud in one big gulp, the fluid literally running out of the bottom of the hole. At times the loss of returns may be so rapid that a vacuum develops in the drill pipe, hose and pumps; the latter will run away the same as though a surface mud line broke. Other formations will take the mud slowly for a time and then will increase rapidly and return of the drilling fluid will cease entirely. This may be expected as pressure of the formation will present some resistance to the entry of the fluid at first but after it has been overcome, fluid will enter it readily. Any tendency for the hole to take mud is an alarm signal.

Restoring Circulation

Where circulation is being only slightly impaired, the trouble may be quickly corrected by the addition of colloidal material and raising the viscosity without raising the weight. The mud is entering the formation because hydrostatic pressure of the mud column is in excess of the formation pressure and the sheath being built on the wall of the hole is not strong enough to withstand this pressure differential. The weight of the mud may be reduced along with the viscosity increase. As pointed out before, the raise in the viscosity through the addition of colloidal material also increases the wall-building properties and a tougher, more resistant mud sheath will be built on the wall of the hole.

A check of the distribution of particle size in the mud may show that the cause of the poor wall-building properties is due to a uniformity of particles.

If the "bottom falls out of the hole" and all the mud is lost, the drill pipe must be pulled out of the hole while mud is being prepared to seal off the formation. As the mud is obviously being lost into formation having high porosity and permeability or one having a fissure or cavern, some type of plugging, or matting, agent must be employed. These can be mixed with the mud which should have a high viscosity (50 or 60 sec. A.P.I.) and low density (9.5 lb. per gallon or 71.2 lb. per cu. ft.). Some operators like to pump in a heavy slug of the plugging agent and follow it with a mixture of mud and plugging material. Others prefer to mix the plugging material and mud in one batch and pump it in slowly. No pressure should be applied until returns are established, and then gradually.

Trouble may be experienced with the mud-pump valves holding open but this can generally be cured by removing the springs from the top of the valves. The mud screen can be discontinued as long as it is necessary to use the plugging agent. It is also better to have as much as possible of the mixture of plugging agent and mud on hand before an attempt is made to seal off the formation. A succession of small batches may be pumped into the hole without result whereas the same amount in a single batch may do the job.

Sticking Drill Pipe

If the formation continues to take the mixture of plugging agent and mud, a cementing job will be needed.[46 47] Using fibrous cement in stages will seal off most thief formations. The fibered cement is pumped into the hole in batches of 20 to 250 sacks and allowed to take its initial set and this process is repeated until a pressure build-up is obtained. If cementing fails, casing will have to be run or the hole abandoned and the rig skidded.

The condition of the mud will often lead to the sticking of the drill pipe. This subject has been covered by Hayward[48] and Warren[49] and only the relation of mud to the sticking of the drill pipe will be discussed here.

Unsatisfactory condition of the mud will allow cuttings to accumulate in the hole and/or a thick filter cake to form on the wall of the hole; caving of the hole was discussed above. Generally the cuttings accumulate in a washed-out zone immediately above a shelf of harder material. When the pump is shut down the cuttings begin to fall back into the portion of the hole which is in gage and may bridge it entirely, freezing the drill pipe if it is in the hole or preventing its getting back in the hole after it has been pulled; or it may bridge enough to allow the passage of the drill pipe and tool joints but will block passage of the drill collars and bit.

This type of sticking gives the least trouble unless some large, hard pieces of the formation form a wedge. Generally, it can be cured by increasing the mud weight and viscosity. This will permit the cuttings to be carried out of the hole and maintenance of the mud at the higher specific gravity and viscosity will prevent recurrence of the trouble. This trouble frequently occurs while surface hole is being drilled, particularly if a sand or loose conglomerate is encountered. At times, an increase in viscosity alone will serve the purpose. The amount of increase will be the same as that for the prevention of caving. A table showing the amount of colloidal and weighting material necessary to increase the viscosity and weight any desired amount may be found in Section K of the Drilling Equipment Directory.

The formation of a filter cake sufficient to block the hole is more common than realized. For years, drillers have assumed that the sheath built on the wall of the hole depended on the permeability of the formation. As pointed out before, Byck[50] showed that formation permeability had little to do with the deposition of a filter cake and formations having a low permeability could develop a thick filter cake the same as those having a high permeability. Owing to the pressures involved, this filter cake becomes very hard, firm, and almost rock-like. When the bit and drill collar are pulled up into the restriction caused by the filter cake, a further compaction results and the bit may become firmly stuck.

It is far easier to prevent this happening than it is to free the pipe once it is stuck. By keeping the mud weight down (9.6 lb. per gallon or 72.0 lb. per cu. ft.) and the viscosity around 35 to 38 sec. A.P.I. with a very low water loss, this trouble may ordinarily be averted. This means that the viscosity must be due to the colloidal properties of the mud and not due to other factors. If the area is particularly noted for sticking drill pipe due to this cause, the water loss of the mud should be less than 3 cc. if it is at all possible to maintain it at that value. Once the pipe is stuck, it generally requires all of the tricks of working, driving, acidizing, spotting and circulating oil, to free it.

High-Pressure Gas

The control of gas pressures is strictly one of balance in which the pressure of the mud column exceeds that of the gas in the formation. High-pressure gas may be, and is, encountered in any part of the world. It often occurs when it is least expected, particularly when drilling in strange territory.[51] Some of the most dangerous fields have been quite shallow. Pressures may often be much in excess of those anticipated and for that reason no well should be drilled without a satisfactory blowout preventor. If the well is being drilled in strange territory, an adequate margin should be maintained in the specific gravity of the mud.[52 53 54] This of course will impede the rate of penetration but a loss in footage for a large number of wells will not equal the loss occasioned through one blowout.

If there is any reason to believe that gas may be encountered, the mud should be watched closely to see that no gas is becoming entrained. A sudden change in drilling rate which indicates a sand and a potential oil or gas-bearing horizon should be met with a checking of the mud.

Other qualities of the mud should be sacrificed as far as permitted to density and fluidity. The one supplies the weight to hold the gas in the formation and the other allows any entrained gas to escape once it has reached the surface. The weight may be increased to as high as 20 lb. per gallon with the viscosity at 26 sec. A.P.I. or even lower. The water loss in such a mud may be kept low provided it is treated chemically and close supervision is maintained.

Unfortunately, the problem of controlling gas pressure may be complicated by porous, or thief, formation.[55] Any loss in the wall-building properties of the mud will be dangerous and will be aggravated by a sharp increase in the specific gravity of the mud. If circulation is lost, and a large quantity of mud is permitted to enter a thief zone, the height of the mud column may be reduced to the point where it is no longer able to hold the gas in formation.

This makes it necessary in some cases to hold the density and viscosity within very narrow limits, 1 or 2 sec. A.P.I. and 0.1 lb. per gallon (0.8 lb. per cu. ft.) range on the specific gravity. This may be accomplished by adding weighting and colloidal material to raise these values and using chemicals and water to reduce them when necessary. An excess of water should be avoided as it may bring on caving or loss of returns. If water is added, the mud should be thoroughly mixed before it is pumped into the hole. The mud should be kept as stable as possible and care should be taken to prevent over-treatment with chemicals. A flocculation of the mud, which would increase its viscosity sharply, will lead to entrainment of the gas and will promote conditions leading to a blowout.

Water Flow

At times water-bearing formations may be encountered which will literally wash the mud out of the hole. These zones may have abnormal pressures, the same as gas-bearing formations. In one Kansas field, the drilling of surface hole is complicated by a salt-water zone which has an artesian effect. In addition, the salt water will contaminate the mud and cause it to flocculate and lose its wall-building qualities. Once the well starts to flow salt water, difficulty may be encountered in killing it and plugging it off.

For blocking off fresh water, a mud having a low-water loss and a specific gravity sufficient to provide a pressure differential is needed. A pressure differential of 2 to 5 lb. per 100 ft. over the normal pressure should be satisfactory although it may need to be increased if higher formation pressures are known to be present. Caution should be exercised in building up too much weight as the formations which carry such abundant water are generally very porous and permeable and may be turned into thief zones. The object is to force just enough water from the mud into the formation to form an impervious sheath on the wall of the hole and then hold a sufficient pressure on this sheath to prevent the formation water breaking through. Colloidal and weighting materials will block off fresh water.

Generally the water is not fresh but contains a high concentration of some salt, generally sodium chloride. In such cases the colloidal material used should be salt resistant or the regular colloidal material will have to be mixed with

(Continued on Page 58)

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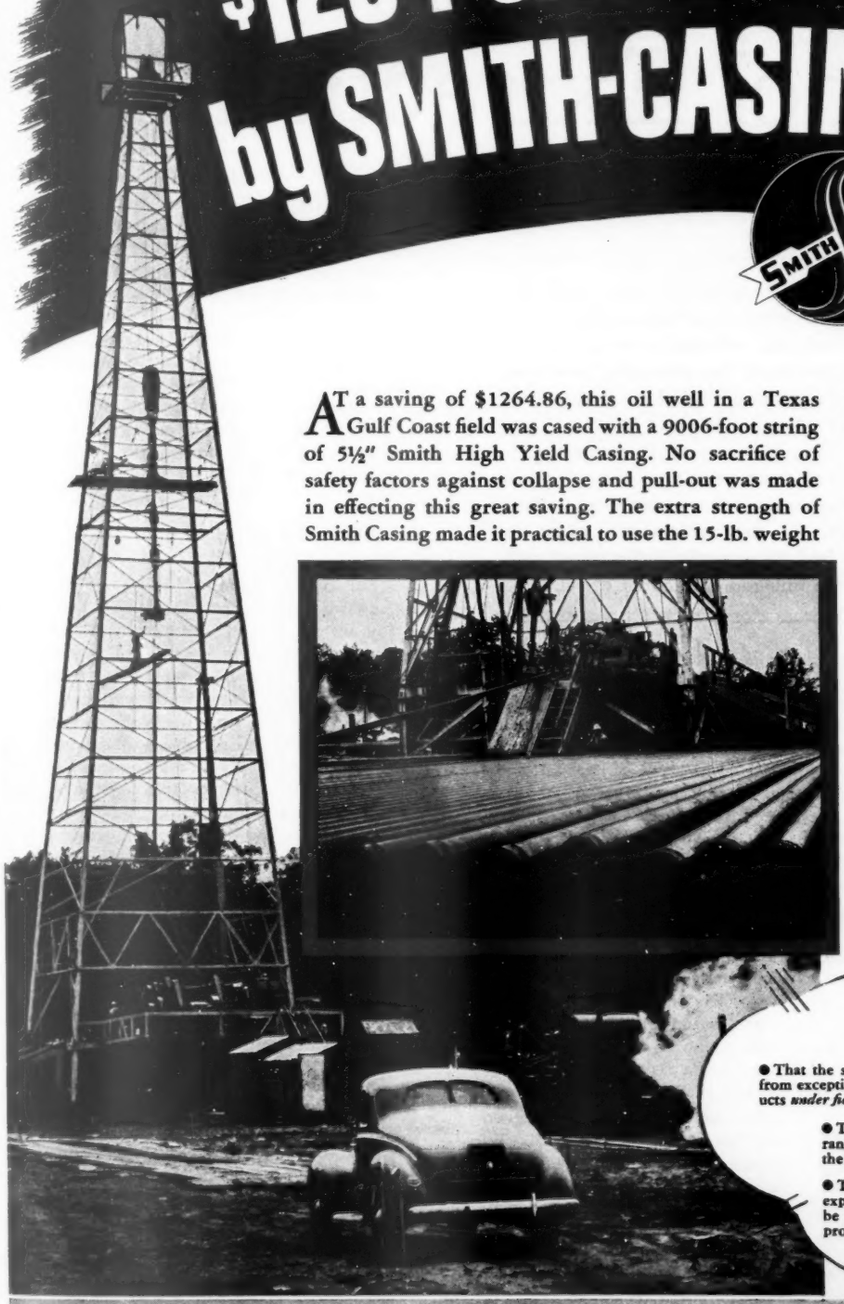

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Refining Pennsylvania Lube Oils by Phenol Extraction

By D. W. KENNY and W. B. McCLUER
Kendall Refining Co., Bradford, Pa.

Kendall Refining Co. last year installed a solvent extraction plant at its Bradford, Pa., refinery in which phenol is employed as the extracting medium. The plant was designed to handle 1,500 bbl. of oil and 1,400 bbl. of phenol per day, though the actual operating capacity depends on the type of stock handled, selectivity of treat and other factors. In this article the plant is described, its operations discussed and data on finished lubricants given.

LUBRICATING oils of Pennsylvania origin have long occupied a favorable position in the industry, but retention of this status requires that Pennsylvania refiners carefully scrutinize new developments and adopt those best suited to their refining problems. Consistent with the policy of steadily improving the quality of its products, the Kendall Refining Co., operating entirely on Bradford crude, made an extensive survey in 1935 and again in 1939 of the solvent extraction processes which were commercially available. Included in this research program was the construction of a small-scale extraction pilot plant which was operated on several different stocks under a variety of different conditions. Block and fleet engine tests were run on solvent-treated oils produced at the pilot plant and a critical examination of all the factors involved lead to the installation of a commercial phenol-extraction plant. Selection of this process was based on a detailed consideration of investment costs, operating costs, quality improvement, ease and flexibility of operation and adaptability of the process to present and future refining requirements.

No information relating to the commercial extraction of Pennsylvania oils with phenol has previously appeared in the literature and it is therefore the purpose of this article to describe this plant and to discuss its operation.

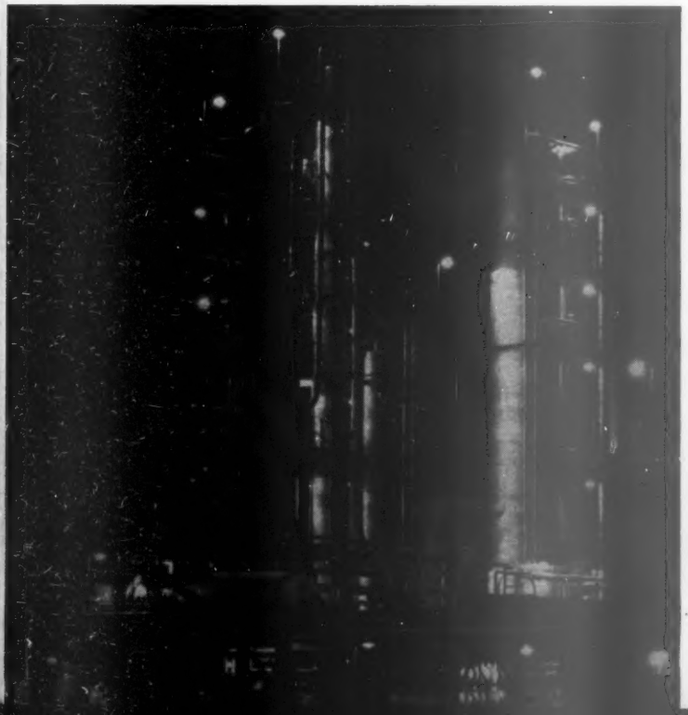
Aromatic and naphthenic compounds, which are undesirable as lubricant components, are relatively soluble in a selective solvent whereas the valued paraffinic compounds are relatively insoluble. Extraction of an oil through contacting with such a solvent results in a quality improvement dependent upon the selectivity of the solvent under the treating conditions used and the quantity of extract removed. From the commercial standpoint the efficiency of the process and the yield of raffinate are of paramount importance especially when operating on expensive Pennsylvania stocks.

The solvent, in addition to its selective properties, should be economically available, chemically stable under conditions of storage and use, and capable of full recovery. Phenol satisfies all these requirements and in addition its use does not require expensive corrosion-resistant materials of construction.

The plant was designed to handle 1,500 bbl. of oil and 1,400 bbl. of phenol per stream day. The actual operating capacity of the plant depends, therefore, on the type of stock handled, the solvent dosage, the selectivity of treat, and the amount of extract removed. On the basis of 10 per cent extract removal, the nominal design capacity was 1,250 bbl. for dewaxed neutrals, 1,050 bbl. for 150-viscosity residual stock, and 500 bbl. for residual stock having a viscosity of 2,000 Saybolt Universal seconds at 210° F.

The commercial plant, designed and constructed by the M. W. Kellogg Co., met its guarantees during a 10-day run on residual stocks in February 1940, and subsequent operation on widely different stocks has been entirely satisfactory.

A simplified flow diagram is shown in Fig. 1. The charge stock is pumped from storage through a low-pressure steam heater to the absorber where phenol contained in excess phenolic water vapor from the recovery system is absorbed by the incoming charge. The absorber temperature is maintained at about 235° F. in order to prevent condensation of steam and the reintroduction of undesired water in the system. The oil, containing a small amount of phenol, is pumped from the base of the absorber under flow control through a cooler to the treating tower where continuous countercurrent extraction with phenol is effected.



Night view of the phenol extraction unit recently installed in Kendall Refining Co.'s plant at Bradford, Pa. The unit was designed to handle up to 1,500 bbl. of charging stock daily

The exact feed location for the oil depends upon the stock being treated but in any case the oil enters as the discontinuous phase and rises through the extract-phenol solution in droplet form. An interphase level is maintained at approximately 70 per cent of the tower height and above this point the oil forms the continuous phase with the down-flowing phenol existing in droplet form.

Operation of Treating Tower

The treating tower contains 19 packed trays which serve to collect and redisperse the discontinuous phase, thus improving distribution and contacting efficiency. Anhydrous phenol (or if desired, phenol containing a small but controlled amount of water) enters the top of the treating tower and phenolic water (containing about 11 per cent phenol) is introduced in controlled amount at the base. The purpose of the phenolic water is to provide reflux in the treating tower.

Operating conditions for the treating tower depend upon the stock being treated. When extracting distillate stocks the tower-top temperature is maintained at 150-155° F. and the tower bottom temperature is maintained at 110° F., the solvent dosage amounting to 60-65 per cent of the oil charge. When extracting residual stocks, the tower-top temperature is maintained at 225°-230° F. and the tower-bottom temperature is maintained at 155° F., the solvent dosage amounting to 130-140 per cent of the oil charge. Tower-top temperatures are maintained by controlling the temperature of the entering phenol and tower-bottom temperatures are maintained by controlling the temperature of the charging stock at the absorber after-cooler.

In general, the entering phenol temperature is maintained 15° to 20° F. below the miscibility temperature of phenol and oil and the tower-bottom temperature is controlled as low as possible without encountering treating difficulties as a result of the increase in oil viscosity at low temperatures. Solvent dosage is determined almost entirely by tower-bottom temperature, the amount of phenolic water added to secure reflux, and the amount of extract to be removed.

The raffinate solution, containing about 20 per cent phenol, overflows the top of the treating tower into an accumulator from which it is pumped through a heat exchanger to the raffinate side of the furnace, emerging from the latter at a temperature of 550° F. At this temperature the phenol content of the raffinate solution is reduced to approximately 4 per cent through vaporizatin of the phenol. The solution-vapor mixture flows to the evaporator section of the raffinate tower where the vapors, containing more than 99 per cent phenol (the remainder being water) are flashed over into the drier section of the phenol tower for subsequent recovery. The lean raffinate solution flows to the stripping section of the raf-

TABLE 1—DATA ON LUBRICANT STOCKS REFINED BY PHENOL EXTRACTION

	Dewaxed motor neutral				Dewaxed heavy neutral				Dewaxed, deresined 120-viscosity bright stock				"800"-Viscosity residual stock		
	Charge	Extract	Raff.	Filtered raff.	Charge	Extract	Raff.	Filtered raff.	Charge	Extract	Raff.	Filtered raff.	Charge	Extract	Raffinate
Gravity, °A.P.I.	30.1	12.0	.....	.....	28.6	10.2	.....	.....	25.8	9.9	27.8	27.9	20.6	8.7	24.0
Flash, °F.	425	420	425	420	465	445	465	460	550	525	550	550	620	585	620
Fire, °F.	475	475	475	475	525	515	525	520	620	.....	620	615	700	.....	700
Viscosity at 100° F.	173.5	1130	162.0	161.5	409.6	17490	322.0	317.6	2114	.....	1625	1615	41,855	.....	20,815
Viscosity at 210° F.	43.8	60.4	.....	.....	57.5	161.6	.....	.....	135.0	830	120.5	120.1	840.5	5,950	629.5
Viscosity index	97.0	—99	.....	.....	94.8	—240.6	.....	.....	96.2	.....	101.7	101.8	92.9	.....	102.1
Pour point	0	.....	0	0	0	.....	0	0	0	.....	0	0	25	.....	20
N.P.A. color	4½	Black	3½	2—	7½	Black	5+	3—	8	Black	7½	5	.....	Black	.....
T.R. color	8⅝	.....	9⅛	16	.....	.....	.....	9⅝	1¾	.....	.....	4½	.....	.....	.....
Conradson carbon	.....	0.23	.....	.....	.....	1.6	.....	.....	1.52	.....	0.80	0.75	6.0	18.4	3.3
Yield, per cent	100	.....	.....	.....	100	.....	.....	.....	100	10	90	.....	100	15	85

finate tower where the remaining phenol is removed by steam-stripping under a vacuum of about 22 in. of mercury. The steam-phenol vapors are condensed and pumped to the extract solution accumulator for subsequent separation of the phenol and water.

When treating light distillates, the stripper temperature necessary for complete removal of phenol from the raffinate sometimes results in the inclusion of a small amount of oil in the stripper condensate and in this event the condensate is returned to the raffinate solution accumulator. Stripped raffinate, containing not more than 0.001 per cent phenol, is pumped through heat exchangers and a cooler to finished-oil storage.

It should be indicated at this point that the degree of stripping required is, within reasonable limits, a function of economics alone since laboratory tests show that clay-treating raffinates to a yield of 50 bbl. per ton will reduce the phenol content from 0.1 to 0.001 per cent and from 0.01 per cent to an indeterminable amount. As indicated above, however, no difficulty is encountered in holding the phenol content of raffinates down to 0.001 per cent as they are produced at the extraction plant.

The extract solution flows from the base of the treating tower to the extract-solution accumulator, the flow being regulated by an interphase level controller in the treating tower. From the accumulator, the solution containing about 85 per cent of phenol, 8 per cent of water, and 7 per cent of extract is pumped to the recovery system. This system comprises a multisectioned phenol tower, exchangers, a furnace, and an atmospheric stripping tower. The extract solution enters the drying section of the phenol tower where all of the water is removed in the form of a constant-boiling mixture containing approximately 11 per cent phenol and 89 per cent water. (Phenol vapors from the evaporator section of the raffinate tower also enter the drier as previously described).

Phenol cannot be recovered from this constant-boiling mixture by ordinary distillation methods and consequently the production of phenolic water in quantities greater than that required in the treating tower plus the quantity which can be handled efficiently by the absorber is to be avoided since any excess over this amount represents an inventory of undesired phenolic water. The only water voluntarily introduced into the system enters as stripping steam and consequently the plant is designed to remove this quantity in the absorber vent gases.

The phenolic-water condenser is mounted vertically near the top of the drier section of the phenol tower and the pressure in the drier is controlled at 5 to 10-lb. gage by maintaining a definite condensate level in the condenser. A portion of the phenolic-water vapors, corresponding to the quantity of raffinate-stripping steam used, flows directly from the drier to the absorber. By increasing the pressure on the drier, as described above, a larger quantity of vapors is diverted to the absorber (and less to the condenser) and provision is thereby made for disposing of occasional excess amounts of phenolic water. The condensed phenolic water flows to the phenolic-water accumulator to serve as recycle to the treating tower and as reflux for the drier section of the phenol tower.

The dry extract solution is pumped from the base of the drier section to the evaporator section

(Continued on Page 56)

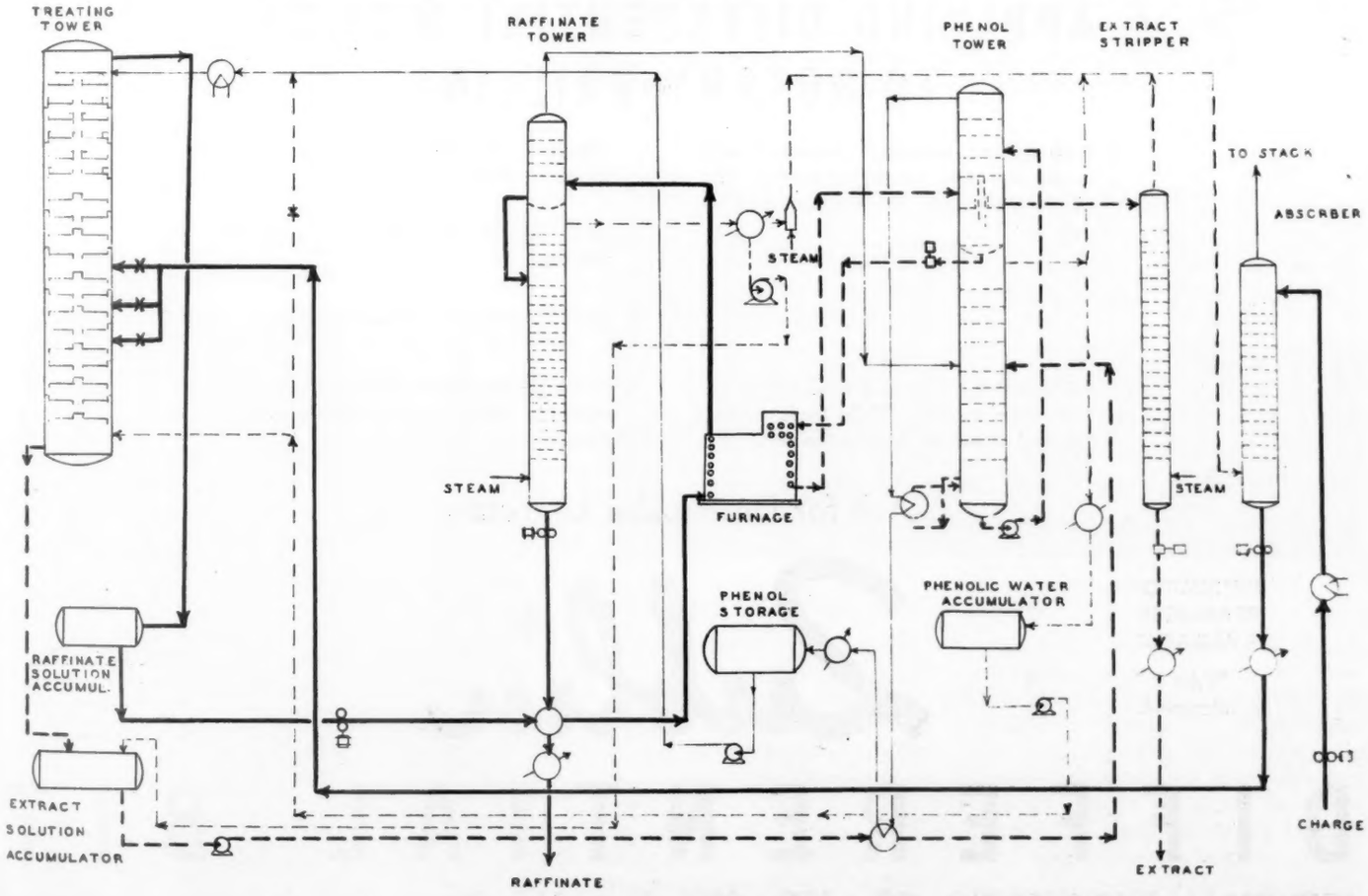


Fig. 1—Flow sheet of a commercial phenol extraction unit

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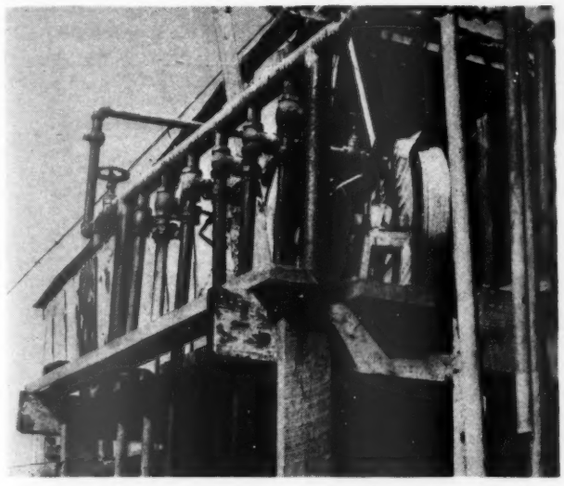
Operating Ideas

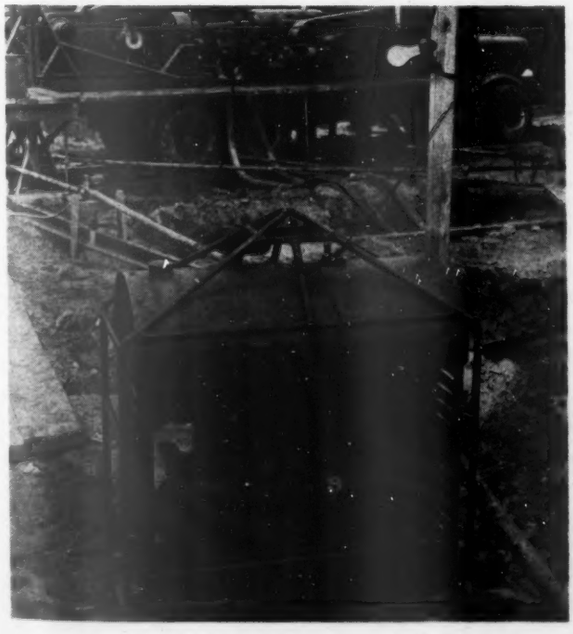
Floor Control for Pit Siphons and Jets

Centralizing control of the steam jets normally used to clear various mud and shale pits, one company leads all steam lines from the manifold located just outside the derrick floor, and at that level. By means of a series of individual valves on the lines from this manifold to the various pit jets, it is possible for the driller or some one on the derrick floor to empty any pit and keep the work under observation, without absenting himself from a position where his services may be otherwise required.



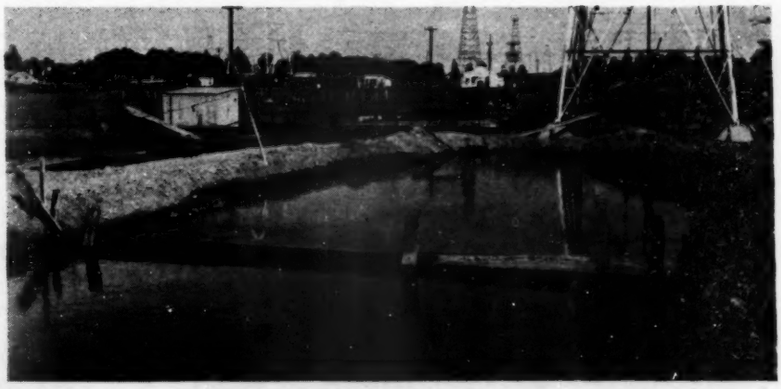
Sucker-Rod Frame Protects Light Plant

A guard, made from old sucker rods and bolted to the steel skid supporting the unitized light plant used on a portable drilling rig, protects the motor and generator from damage. The top of the frame is built so a winch line can be hooked to it and loaded on to the main unit.



Skids for Electric-Wire Reels

One drilling contractor operating a diesel-electric rig has devised the method shown in the photograph for protecting the reels on which the electric cable is wound for moving. The main skids are made from drill pipe with the supporting frames made from 6-in. channel irons. The cable is easily wound by turning the reels by hand, the rims being specially rounded for that purpose. For locking the spools in position after the cable has been spooled, holes have been cut in the rim and sockets welded to the frames. It is only necessary to slide a pipe through the socket on one end of the frame, through the holes cut in each reel and out through the other socket.



Skimmer Clarifies Mud Supply

Leaves, loose paper and other trash can easily clog mud-pump suctions if not removed from the pits before reaching the intake. One contractor, flowing his mud through an open pit, places a skimmer across the surface of the pond just ahead of the suction pits, enabling the floating trash to be halted at this point and removed with a rake before becoming water-logged and sinking to be carried against the foot-valve assembly. The skimmer, which may be either boards arranged to rest on the sides of the pit and be carried half submerged, or a log which by its own buoyancy lies across the mud flow, may be adjusted laterally to cover as much of the pond as desired, and the current of the mud stream used to drive the trash along the skimmer to either bank where it may be easily removed from the pit.

Hot-Acid Treating Is Latest Acidizing Development

By DANA G. HEFLEY and JACK SUTHERLIN
Dowell Incorporated, Tulsa

A NEW acidizing technique has been developed which makes possible the introduction of hot acid into a formation. In this method the heat of reaction between magnesium and hydrochloric acid is utilized. The actual temperature to which the acid is heated can be regulated by the amount of magnesium used, or by the pumping rate of the acid.

The successful acidizing of gas and oil wells employs the chemical reaction between hydrochloric acid and predominantly limestone formations in order to increase the porosity and permeability of the producing formation.[1,2,3] When the per cent of calcium carbonate in the formation is high, this acidizing reaction proceeds at a relatively rapid rate. However, some formations, particularly dolomites, which contain high percentages of magnesium carbonate, react only very slowly at the well temperatures ordinarily encountered.[4]

When these slow-reacting formations are treated with cold acid, the pores near the critical zone often are not materially affected. In those cases the acid penetrates the formation laterally for some distance before it is spent, and consequently there is less solution of the formation in the critical zone which limits the well's production.

A compilation of results from hundreds of wells shows that initial treatments are much more uniformly successful on fast-reacting limestones such as the Kansas City in Kansas than they are on slow-reacting dolomites such as produce in West Texas. In these fast-reacting formations, the critical pores are substantially enlarged by acidizing.

Effect of Temperature

Since the earliest days of the acidizing process, attempts have been made to speed up the rate of reaction when slow-reacting limestones and dolomites were treated with hydrochloric acid.[5] It is known that if the temperature of the reacting substances is raised, there is always an increase in the rate of reaction. Laboratory tests have indicated that the rate is approximately doubled by a temperature rise of 20° to 40° F., depending upon the pressure. For this reason, many methods have been suggested for heating acid before its introduction into the formation.

Acid has been heated at the surface in various ways, but these have been discarded because of inefficiency, excessive cost, or undue amount of time involved. The biggest fault with any such procedure is that much of the heat of the hot acid is lost before the acid reaches the well bottom, due to heat exchange between the acid and the well equipment or formation. The circulation of hot oil before an acidizing treatment also has been tried as a method of heating up the formation itself, but this generally has been unsuccessful because of the enormous heat-exchange losses.

In the new successful method of introducing hot acid into the formation, magnesium metal is placed in the tubing near the bottom of the well, and then acid is pumped into the tubing. The reaction between magnesium and hydrochloric acid is exothermic, being accompanied by the evolution of a great amount of heat. Thus, when the acid reaches the bottom of the well, some of it reacts with the magnesium, thereby heating the main body of the acid immediately before it enters the formation.

The desirable effect of heat on the acidizing reaction can be demonstrated by some simple solubility tests. At room temperature it requires 30 minutes or more to dissolve 1 g. of Permian dolomite well cutting in 25 cc. of 15 per cent hydrochloric acid. If the same test is run using a small piece of magnesium to raise the temperature of the acid to 200° F., the time required is only about 10 minutes. A similar test using cold acid on Kansas City limestone is completed in about 5 minutes. By these tests it is illustrated that when dolomites are treated with hot acid instead of cold acid, the reaction rate more nearly approximates that of cold acid upon fast-reacting limestones.

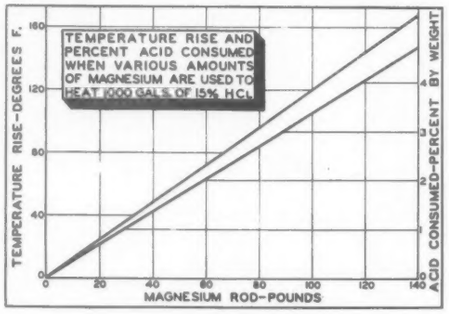


Fig. 1—Acid reaction with magnesium

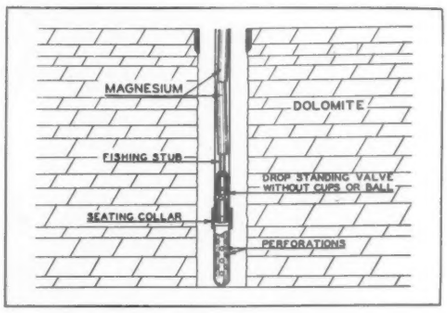


Fig. 2—Well equipment for hot acid

As the hot acid reacts at a faster rate than cold acid, more of the reaction takes place near the well bore. In treating dolomites and slow-reacting limestones this is very desirable, because the limiting pores near the critical zone are then enlarged to a greater extent.

The hot-acid treatment is particularly applicable to the last stage of a reverse compound treatment. In this type of treatment, a small-gallonage stage follows one or more larger-gallonage stages, the sole purpose of the final stage being to increase the size of the pores and channels near the well bore so that insoluble particles which have been loosened by the previous stages can be washed from the pores into the well.

Over 50 wells have been treated using the new hot-acid technique, and the results have thoroughly demonstrated the superiority of hot acid over cold acid on slow-reacting formations. Listed in Table 1 are the results of several hot-acid treatments selected at random.

The basic reaction involved in heating acid with magnesium is represented by the following equation:

$$\underset{24.3}{Mg} + \underset{72.9}{2HCl} = \underset{95.2}{MgCl_2} + \underset{2}{H_2}$$

The numbers shown below the symbols may be considered as the relative combining weights of the different substances. Therefore, the equation states that when 24.3 lb. of magnesium react with 72.9 lb. of hydrogen chloride (which is contained in approximately 54.3 gal. of 15 per cent hydrochloric acid), there are formed 95.2 lb. of magnesium chloride and 2 lb. of hydrogen.

Experimental data have shown that for every

Type of equipment used in making hot-acid treatments

pound of magnesium thus dissolved, 8,400 B.t.u. of heat are liberated. This is sufficient heat to raise the temperature of 1,000 gal. of 15 per cent acid 1.2° F. Fig. 1 shows the temperature rise which will be obtained in 1,000 gal. of 15 per cent hydrochloric acid by reaction with various quantities of magnesium. Also shown is the per cent of acid which is consumed by reaction with the magnesium. From this figure it may be seen that if 60 lb. of magnesium rod are used, the temperature rise in the 1,000 gal. of acid will be 72° F., and the acid concentration will be reduced about 2 per cent by reaction with the magnesium.

With an assumed bottom-hole temperature of 110° F., the temperature of the acid immediately above the magnesium would probably be around 100° F. A temperature elevation of 72° F. would raise the temperature of the acid to 172° F. just prior to its introduction into the formation.

Since approximately the same amount of heat is liberated any time a pound of magnesium is dissolved, the total amount of heat liberated by the reaction of any quantity of magnesium with acid can be calculated. If it is discovered at the end of a treatment that the magnesium has been dissolved, then it is irrefutable that the heat has been liberated.

In a recent treatment in the Wasson pool of West Texas, a temperature bomb was used to record the temperature of the acid at the bottom of the well. The chart showed that a temperature rise in excess of 100° was held for over 20 minutes during the course of the treatment.

Rate of Chemical Reactions

The rate of most chemical reactions is retarded by an increase in pressure particularly when a gaseous product is formed as a result of the reaction. The reaction between magnesium and hydrochloric acid is no exception to the general rule. To determine the rate at which this reaction proceeds under various pressures a series of large-scale laboratory experiments were made under conditions approximating actual treating conditions. In these tests 10 ft. of 1.3-in.-diameter magnesium rod was placed in a joint of 2-in. tubing and 15 per cent hydrochloric acid was pumped through the tubing at a rate of 20 g.p.m. By weighing the rod and measuring its surface at the start of the test and again after a definite time of reaction, it was possible to calculate the rate at which the reaction was taking place. Various tests were run at pressures from atmospheric to 2,000 lb. per sq. in.

The reaction rates as determined in this series of tests varied from 12.0 lb. per sq. ft. per hour at atmospheric pressure to 2.7 lb. per sq. ft. per hour at 2,000 lb. pressure. At 500 lb. the rate was 4.4 lb., and at 1,000 lb., 3.4 lb. per sq. ft. per hour. To offset this reduction in the reaction rate as the pressure increases it is only necessary to slow down the rate of introduction of the acid. By this means acids of any desired temperature can be introduced into the formation.

A second series of tests, similar to that described above, was conducted in which the pressure was 500 lb. in each test but the rate at which acid was pumped through the tubing was varied. These tests proved that there is little variation in reaction rate with variations in the velocity of the acid, as the reaction rate was practically constant at 4.4 lb. per sq. ft. per hour at all pumping rates between 15 and 40 g.p.m. Below 15 g.p.m. the reaction rate showed a tendency to increase as the pumping rate decreased.

Hot-acid treatments can be made by either of two methods—the constant-temperature method and the constant-rate method.

In order to maintain a constant temperature, the pumping rate must be diminished gradually throughout the treatment. This is necessitated because round magnesium rods are used; hence, as the magnesium is dissolved, the surface area of the metal is diminished, so that the total amount of heat liberated per unit of time is lessened.

As the words indicate, in the constant pumping-rate method the acid is pumped at a constant rate throughout the treatment. Naturally, since the magnesium surface is constantly decreasing, the temperature of the acid also constantly decreases, because less heat is being evolved.

A hot-acid treatment requires little more time and expense than a regular treatment. For the only additional requirements are that magnesium be furnished and supported above the tubing perforations. In a well equipped for pumping, a standing valve with the ball removed and a stub rod attached to it may be dropped in the tubing for support of the magnesium rod. The tubing is then filled with oil and sections of magnesium rod dropped on top of it. When the required amount of rod has been dropped, a measuring line is run to be sure that all of the rod has reached bottom. Fig. 2 illustrate this procedure. Acid is started and the treatment concluded in a predetermined length of time. The measuring line is then run to be sure that all magnesium has been removed. A rod socket can be run on the measuring line if no sand line is available for fishing out the standing valve.

If the well is flowing and not equipped with a working barrel, the same procedure is used, except that a nipple is dropped in the tubing anchor to support the magnesium rod.

It is very important that any well treated with hot acid in a regular formation treatment be capable of taking fluid at a fairly fast injection rate. Otherwise, the acid could not be pumped into the well fast enough to control the temperature of the acid, with the resulting possibility that acid might be heated more than desired.

Since the acid pumping rate is a determining factor in the amount of temperature rise, it is important that means be provided for closely checking the pumping rate at frequent intervals. Oil for the flush aftertreatment should be located conveniently at the well site.

Hot acid also has been used in wells that are restricted by deposits of wax or paraffin. In wells of this type no attempt should be made to force the hot acid into the formation as some melted paraffin might also be carried into the formation resulting in plugging of the pores when the paraffin solidified. Treatments of this type can be made preferably by removing the tubing from the well and then introducing the magnesium and acid into the casing. The reaction takes place opposite the producing section, and any paraffin or wax accumulated there is melted by the heat which is generated. The fluid is then bailed from the well before it has cooled sufficiently to allow the wax to resolidify.

Another application in which hot acid has been used successfully is for the removal of metallic oxides and sulfides from well screens. Many of these metallic deposits, which often plug screen openings, are extremely slowly soluble in cold acid but dissolve in acid quite rapidly at temperatures of 150° F. or above. Treatments of this type can either be made by introducing the hot acid through tubing or by placing the acid and magnesium metal directly into the screen section to be cleaned, in a manner similar to that recommended for paraffin removal.

TABLE 1—RESULTS OF TREATING WITH HOT ACID

Well number	Previous treatments (gal. & date)	Results of previous treatment bbl. per day	Hot-acid treatment (gal & date)	Amount of magnesium used, lb.	Results of hot-acid treatment bbl. per day	Results
1	1,500 1-2-40	38 to 65	1,500 2-11-40	49	65 to 233	Retreatment with hot acid gave 260 per cent increase, after previous treatment with regular acid gave only 70 per cent increase.
2	9,500 4-29-40	48 to 343	1,000 5-4-40	30	343 to 595	Fourth stage of hot acid gave larger increase than 9,500 gal. used in first three stages.
3	9,000 4-19-40	240 to 835	1,000 5-6-40	50	850 to 1,697	Hot acid doubled production after 9,000-gal. treatment.
4	8,500 10-28-39	360 to 533	1,000 5-15-40	50	619 to 864	Hot acid gave 40 per cent increase on well previously treated with 8,500 gal.
5	9,000 7-17-38	312 to 816	1,500 5-23-40	77	38 to 107	181 per cent increase on well treated 2 years before.
6	1,000 5-24-30	0 to 60	1,500 5-26-40	75	60 to 36	Hot-acid stage was second of three stages. Third stage increased production to 115 bbl. per day.
7	None		1,500 6-11-40	75	9 to 15	67 per cent increase on old well.
8	1,000 4-38	Increase in production	1,000 6-14-40	50	14 to 31	120 per cent increase on old well.

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Questions and Answers

Has there been much acidizing of the Corniferous lime and dolomite formations in western Kentucky?—J. M. C., Lima, Ohio.

In recent years wells in the Corniferous lime and dolomite in western Kentucky have been acidized. This work has been increasing from year to year and it has now become quite common.

The wells when treated with acid respond in various ways. The main difficulty in the area is the fact that there are no samples of the producing formation available and it is not exactly known what type of lime is being treated. If samples of the producing formations were obtainable, results would be more easily predicted and more uniform.

Another controlling factor is the lack of cement around the casing which prevents any pressure being applied to the acid for forcing it into the formation. In tight formations this means that the acid itself must do the work without the aid of any pressure forcing it into the formation. On wells where a sample of the producing formation is available and where casing has been properly set and cemented, uniformly good results have been obtained through acidization.

Treatments vary from 500 to 1,000 gal. of 15 per cent inhibited acid. A recent development has been the use of hot acid and good results have been obtained with it; it is applied without pressure in most cases. Acid jet guns have been used in several wells and have shown good results.

Water Injection in Oil Producing Operations Of Southeast Kansas

By PAUL REED

IN Greenwood County, Kansas, operations of three different types are employed for dealing with water injection carried on in connection with the production of oil. Each of these may be observed on certain properties of major companies and independent operators in this area. It is appropriate to discuss these practices at this time because of the growing interest and general lack of information regarding what is actually being done in the field on properties: (*a*) Where water flooding of sands is being conducted at depths considerably below those customarily exploited in Mid-Continent water flooding; (*b*) in properties where water is disposed of by injection in the ground in such a manner that oil production is increased; (*c*) water is disposed of in old wells where decline of production is checked. Most conspicuous features of these operations which are to be observed on a filed trip are described in this article.

Pumping equipment recently installed to supply a Kansas water-flood project with water from a 1,000-ft. sand

Since two of these operations are conducted on Bartlesville sand properties and the third type is to be found where production comes from what is known as the "first break" in the Mississippi lime, in the Virgil pool, a general statement regarding these formations should be given.

"Lenses of oil-bearing sand ranging from 50 to 125 ft. thick, 0.5 to 1.5 miles wide and 2 to 6 miles long known as shoestring sands, occur in the lower part of the Cherokee shale of the Pennsylvanian series in Greenwood, Butler, and adjacent counties in Kansas. . . . The shoestring oil fields were developed largely between 1920 and 1926. . . The gravity of the oil is approximately 40° A.P.I. The principal fields will ultimately produce 7,000 to 10,000 bbl. of oil per acre and will probably average 7,000 to 8,000 bbl. Drilling costs are low; well depths range between 1,500 and 2,800 ft.; most of the oil is pumped with central power plants so that lifting costs are moderately small. Practically no water is produced in many of these fields[1]."

"The Virgil pool is one of the early pools to produce from the 'Mississippi lime' in Kansas. . . . It is best known as a pool of small wells of exceptional staying qualities and as a structural accumulation in which the distribution of paying production on the structure is irregular to the point of being streaked[2]." The pool has produced since 1916; the gravity of oil is 37°-41° Be. gravity.

In the Seeley-Wick pool in the northeast corner of Greenwood County is a water-flood project which is among the earliest systematic floods in Kansas. In addition to being one of the oldest projects to be undertaken and continuously operated in the Mid-Continent area, according to practices originating in the Bradford, Pa., field, this project has significance because it is operated where oil is produced from Bartlesville sand at a depth of 2,000 ft. This is more than three times as deep as most of the flooded formations in the Mid-Continent.

This flooding operation in the Seeley-Wick pool was started in 1935 with one five-spot, employing a spacing of 660 ft. between oil wells. Since then the project has been increased until now the water-flooded area on the property has 12 oil wells and four water wells which are distributed in the manner indicated by Fig. 1. Until last month the project relied entirely for its water supply on surface drainage which has been impounded by a dam on the property. Since the drainage area is small the water supply has been limited and at numerous times it has been insufficient for the requirements of the project. Last month equipment was installed to increase the supply by pumping water from a 1,000-ft. sand producing salt water.

During the time the project has been operated the principal troubles have been the result of irregular supplies of water. But in spite of the fact that no water has been available for injection purposes on numerous occasions, for periods varying from a few weeks to as long as 6 months, the project has produced more than 150,000 bbl. of oil in the course of producing periods totaling about 3½ years.

Between the time when the property was originally drilled in 1923 and the beginning of water flooding, approximately 7,000 bbl. of oil per acre had been produced. Only one core of the sand has been taken. It is reported that the results of core analysis indicated that more than 28,000 bbl. of oil per acre remained in the sand. Even though this may be somewhat optimistic, opinion has been expressed by some who have observed the property closely that it may be possible to produce 8,000 bbl. per acre if adequate facilities are provided for conducting water-flooding operations according to modern methods without interruptions due to shortage of water.

When the property was first developed, wells produced only from 35 ft. of sand in the upper part of the Bartlesville horizon. After this stratum was depleted, deeper drilling revealed that 15 to 20 ft. of sand and shale separated the upper sand from 35 to 50 ft. of good oil-bearing sand below.

To date water-flooding operations have been carried on only in the lower sand. It is believed that the possibilities for flooding the upper sand profitably are good and that operations for this purpose are likely to be undertaken some time in the future.

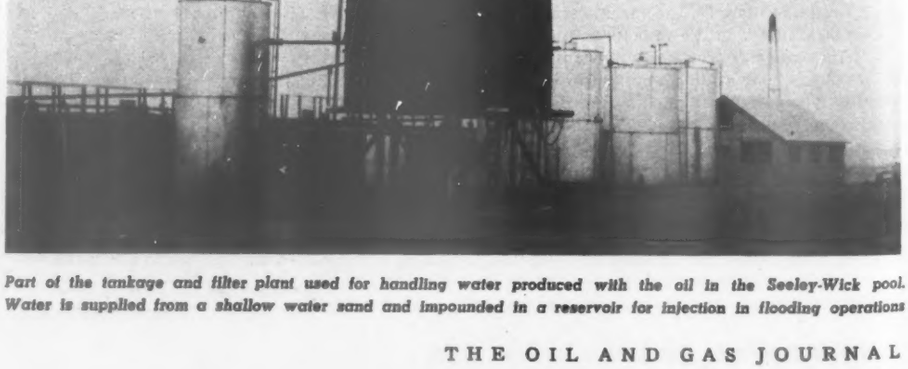
Sand Characteristics

The permeability of the sand is similar to that of sand in the most profitable parts of the Nowata, Okla., water-flood area, but the permeability is more uniform. As at Nowata there is no water table in the sand. Core analysis and operating experience show the permeable section lies between the middle and the top of the oil-bearing sand. On top of the oil-bearing sand is a broken streak which permits water to bypass and give trouble similar to that encountered at Nowata. At times as much as 70 per cent of the water injected into certain intake wells has been lost by escaping through this thief, or broken streak.

No pressure is applied on the surface for the injection of water; however, it is believed by those familiar with the project that pressure could be applied to advantage particularly at certain intake wells. Under normal conditions when an adequate supply of water is available, about 1,200 bbl. of water has been injected which enters the intake wells by gravity flow after leaving the filters. Now that an additional amount of water is being supplied from the 1,000-ft. well, plans call for the injection of 1,600 bbl. daily with an increase later on to 1,800 to 2,000 bbl.

During the period of water shortage, production from the project has dropped as low as 60

1. "Origin of Bartlesville Shoestring Sands, Greenwood and Butler Counties, Kansas," N. W. Bass, Bulletin of the American Association of Petroleum Geologists, Oct. 1934, p. 1313.
2. "Structures of Typical American Oil Fields, a Symposium," American Association of Petroleum Geologists. Vol. 2, p. 142.



Part of the tankage and filter plant used for handling water produced with the oil in the Seeley-Wick pool. Water is supplied from a shallow water sand and impounded in a reservoir for injection in flooding operations

bbl. per day. When a sufficient supply of water is at hand normal oil production has been in the vicinity of 150 to 160 bbl. per day. With the recent increase in the supply of water, oil production may be increased considerably above this. Maximum production has been 200 bbl. per day.

In the early stages of flooding this property, the water was not treated or filtered. Later on, filter-plant facilities were installed which are of a type similar to that employed by the major flooding operator in the Nowata field. This equipment consists of a settling tank, two conventional sand-and-gravel filters and chemical mixing equipment for putting a patented compound into the water. The capacity of the filter plant is smaller than that of plants of a similar type installed in the Nowata field. According to the present setup, water handled by the filter plant for injection operations includes: (*a*) Water from the fresh-water pond; (*b*) water produced with the oil; (*c*) salt water from the 1,000-ft. sand.

Within recent months considerable attention has been given to eliminating trouble caused by the presence of algae which retarded injection of water by clogging the pores of the sand in intake wells. It has been found that backwashing wells over a period of several days is effective. In so doing it has been noticed that different wells will backwash under different static-head conditions, and it has been found to be important to pump the well down to the bottom after backwashing in order to remove all of the scum. Algae in fresh water has been found to give more trouble than algae in salt water which are less numerous and easier to eliminate. It is anticipated that the salt water supplied from the 1,000-ft. sand will make it possible to lower algae trouble a large extent.

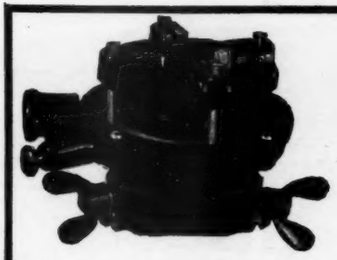
Salt water from the 1,000-ft. sand will be aerated for the purpose of removing hydrogen sulfide. Aeration will be accomplished by having the water flow through a flume, tilted at 12° angle, equipped with baffles to produce turbulence.

Wells on the property can be drilled for $1 per foot, and can be drilled and equipped for about $5,000. Wells are pumped by a central power. Casing is of 5-in. and 7-in. diameter. Both intake and producing wells are cased to the sand. Intake wells are equipped with tubing set in uncemented packers. It has been found to be advantageous to have intake wells equipped with casing and tubing, which can be readily removed, in order to facilitate backwashing operations which can be conducted more effectively when it is possible to run a bailer to the bottom. Use of cement-lined tubing is favored for intake wells.

Results obtained in operating this water-flood property provide a demonstration of water-flooding operations conducted at a greater depth than is customary in Mid-Continent practice. The five-spot spacing of 660 ft. is considerably greater than the 330-ft. and 440-ft. spacing which is widely used. Reports of water injected and oil recovered show that during the water-flooding history of the property, 8 bbl. of water has been injected for each barrel of oil recovered. This compares favorably with 10 to 1 ratio which prevails at numerous Mid-Continent flood projects. And it is believed that the ratio may be lowered as the result of planned changes in method of operation.

Agard Pool

In the Agard pool of Greenwood County, a major company has undertaken to carry on water-disposal operations according to a systematic method directed toward increasing oil production. At this property, production comes from the Bartlesville sand, the top of which is found at a depth of 2,100 ft. The unusual feature of the property is that a well was drilled well inside the producing area in the vicinity of the central power for the joint purpose of disposal and flooding. In coring for this dual-purpose well, only 15 ft. of saturated sand was found. This is in the upper part of an 80-ft. sand body. Above the saturated sand there



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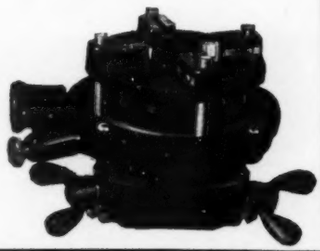

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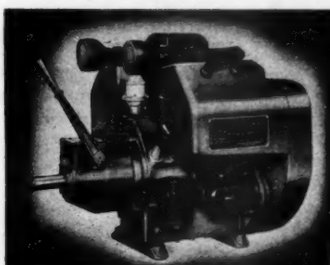

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is shale and sand which probably takes a considerable amount of the water injected.

In addition to salt water produced on the lease, water from a nearby stream and an 800-ft. well is injected. An offset dry hole on the property of

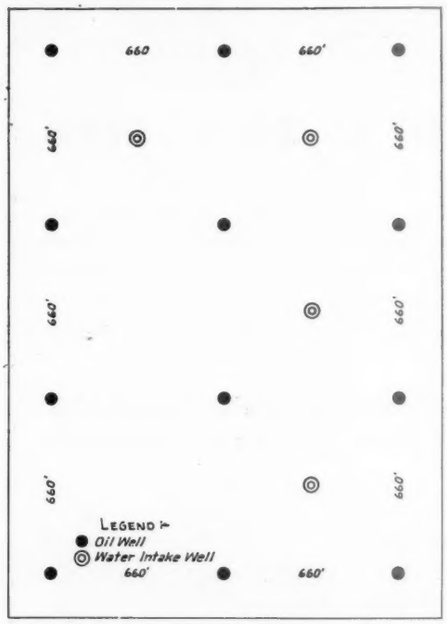

Fig. 1.—Five-spot pattern of oil wells and water wells at a flooding project in the Seeley-Wick pool of Greenwood County, Kansas

another company has been utilized by that company as a disposal well. The effect of this well seems to be beneficial to the flooding operation. Before the injection of water a rising water table had been observed.

The systematic disposal-flooding operation being discussed was undertaken 3 years ago when the production of oil from seven wells was 35 bbl. per day. In the course of flooding a peak production of 70 bbl. was obtained. Subsequently it has dropped to 40 bbl. which is more than it was 4 years ago. Altogether about 500,000 bbl. of water has been injected with water-to-oil ratio of somewhat less than 10 to 1.

Treating Plant

The water is treated in a plant of the same type but smaller than that used by this operating company to prepare water for disposal to underground formations at properties at the Atherton pool. properties near Chase, and at other points in Kansas. Water is aerated by passing through a tower before entering the concrete settling basin, sodium aluminate is added by a chemical mixer operated by one of the rod lines located near the plant. Water passes from the settling basin to one of the two filters before gravitating to the injection well. The settling basin has a capacity of 600 bbl. The amount of water now handled is about 400 bbl. per day. When operations commenced 25 bbl. per day were injected.

In the Virgil pool, water produced with the oil is injected in the Mississippi lime for disposal requirements. In doing this, old wells are used and no wells are specially drilled to this formation for injection purposes. In some cases it appears that production has been increased, but such increases are usually related to recent acidizing. Experience of operators in the field indicates that disposal of water in old wells as practiced in the area has a tendency to check the decline of production.

In Greenwood County, methods for dealing with water in connection with oil production reflect practices which are followed in eastern and western Kansas and for this reason it may be regarded as frontier territory between these regions. Present experimenting may develop methods which will add to the effectiveness of oil recovery in areas where similar conditions exist.

Refining Pennsylvania Lube Oils by Phenol Extraction

(Continued from Page 49)

of the phenol tower. In this section of the tower, which is maintained at a pressure of approximately 25-lb. gage, a portion of the phenol in the extract solution is vaporized, through contact with hot vapors returning from the furnace. The remainder of the extract solution drops to an accumulator section in the tower from which it is pumped through the convection section to the extract side of the furnace. Leaving the furnace at about 650° F. the hot extract solution flows back to a midpoint in the evaporator section where the hot phenol vapors are released. The lean extract solution then flows to an atmospheric stripping tower, where the phenol content is reduced by steam stripping to about 0.005 per cent.

Stripping Lean Extract Solution

It should be noted that all the heat required for removing water from the extract solution is obtained by condensing phenol vapors from the evaporating section of the phenol tower. In this sense the phenol tower is constructed on the multiple-flash principle.

The anhydrous phenol vapors from the evaporator section of the phenol tower pass through the drier reboiler, heat exchangers, and a cooler into the phenol storage drum for recycling through the treating tower. The steam-phenol vapors from the extract stripper flow directly to the absorber for recovery of phenol. Vent gases from the absorber, containing about 0.1 to 0.5 per cent phenol and 99.9 to 99.5 per cent water plus noncondensibles, are discharged to the furnace stack. Operating experience has indicated that the plant is capable of disposing of somewhat greater quantities of phenolic water than are normally produced through the use of stripping steam and therefore the accidental accumulation of small amounts of excess phenolic water is easily nullified by rerunning this excess through the drier and absorber. Data for several months' operation indicate that phenol recovery amounts to 99.96 to 99.97 per cent of the phenol circulated.

The plant is well equipped with instruments and control devices. Operation is simple and flexible to the extent that only two men per shift are required for the entire operation of the plant. Specifications on products are easily maintained and rerunning is necessary only for slop produced during changeovers to other stocks. The normal melting point of anhydrous phenol is 105.6° F. Consequently all lines carrying phenol or phenolic water are steam-traced to prevent freezing and plugging of the lines, and no difficulty of this nature has been experienced. The plant is well equipped with safety devices and in 10 months' operation no lost-time accidents of any nature have occurred.

Shutdowns due to equipment failure have been at a minimum; corrosion has occurred only to a minor degree and is not considered serious. All utility requirements are within the guarantees of M. W. Kellogg Co. and operation to date on all stocks has been entirely satisfactory.

Even though it is generally recognized that inspection data on oils are not always indicative of oil quality and that all oils must be tested in full-scale automotive equipment before quality can be established, certain inspection data are given in Table 1 which are representative of the improvements effected by treating with phenol.

Dewaxed 180 and 350 neutrals which have been phenol-treated show a substantial increase in viscosity index, an increase in gravity, a slight reduction in viscosity at 100° F., and no change in volatility as reflected by flash and fire tests. Filter yields on these stocks for a given color have been increased materially and the Indiana oxidation stability has been improved greatly. The carbon residue on these stocks is very low initially and any improvement in this test is of no consequence. It is interesting to note, however, that the carbon residue of the extracts are relatively high, the viscosities are very high and the flash and fire tests are relatively low. These facts are pointed out only because of the bearing which they have on the mechanism of solvent extraction.

Inspection data covering 120-viscosity bright stock are similar in all essential characteristics to those previously discussed for neutrals and in addition it is evidenced that the carbon residue of bright stocks is reduced substantially by phenol-treating without loss of volatility as evidenced by flash and fire tests. It is also interesting to note the very high viscosity, the low gravity, the low flash and fire points, and the high carbon residue of the extract. Filter yields for this stock to a given color have been greatly improved as has also oxidation stability as evidenced by viscosity change during oxidation and by Navy work-factor ratings.

Inspection data for one very high viscosity stock are also given. The purpose in presenting these latter data is to show the extreme flexibility of the plant, and the improvement in gravity and carbon residue which can be effected in stocks having a viscosity in the neighborhood of 800 Saybolt Universal seconds at 210° F. The viscosity, gravity, and carbon residue of the extract from this stock are of considerable interest.

BOOKS

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Treatment of Drilling Fluid to Overcome Difficulties

(Continued from Page 46)

fresh water before being added to the mud. If a satisfactory mud cannot be obtained by this method, a cooked starch or other materials may be used for producing a mud which retains its colloidal properties in the presence of the salt. Sometimes the salt water will have an elevated temperature and this will be a complicating factor.[56]

High Temperatures

The temperature gradient in drilling wells may vary from 1° F. in 500 ft. to as much as 1° F. in 100 ft. but in some areas the temperature may be even higher, temperatures of nearly 250° F. at 10,000 ft. being recorded. Without the salt water, this is a complicating factor.

Byck's[62] experiments point to the solution of the problem, as he found that some muds show poorer filtration characteristics at elevated temperatures than others. Byck did not carry his experiments beyond 170° F. but results below that showed what could be expected of the mud. There is also the fact that the mud itself rarely exceeds 175° due to the fact that the mud is not in contact long enough with the hot formations to absorb much heat.

Careful selection of the mud for wells which may encounter abnormal temperatures is required. In addition chemical treatment will be needed. Byck found that chemically treated muds have much better filtering characteristics than did the untreated muds. Quebracho soda treated muds showed a minimum viscosity at higher temperatures than the untreated muds. Varying the concentration of the mud also caused the effect of heat on the mud to be altered.

The controlling factor should be the filtration test carried out at temperature near that to be encountered. It may be found that the mud being used will withstand the heat. If not, small batches of mud of varying composition can be treated and the best mud determined for the particular well.

Coring, Formation Testing and Fishing

In coring, formation testing and fishing, the normal circulation of the drilling fluid is not maintained and trouble may develop with mud used for ordinary drilling. A build-up in viscosity of 2 to 5 sec. A.P.I. and a build-up in weight of 1.0 to 0.3 lb. per gal. will generally be sufficient to avoid sticking of the drill pipe or other trouble. The build-up may be accomplished by simply lowering the suction of the pump or it may be necessary to add some colloidal weighting materials. Numerous trips may be required while fishing and the water used to wash the pipe may be sufficient to lower the viscosity of the fluid to the point where it will cause trouble. Special wipers are now available which will clean the pipe as good as water and the undesirable dilution is avoided.

Completions

A detailed account of all the types of completions will not be attempted. These generally come under two heads, high pressure and low-pressure completions; in the former the formation pressure is more than enough to support the mud column while in the latter it is insufficient to prevent entry of the fluid into the pay zone.

In high-pressure completions the treatment of the mud is the same as in fighting high-pressure gas, the specific gravity of the mud being increased with enough colloidal content to prevent filtration into the pay zone. When it comes time to bring in the well, the hydraulic pressure against the formation may be reduced by bailing, swabbing, washing with water or washing with a lightened fluid such as gas-cut mud.

Low-pressure completions require a different technique.[57 58 59] The main object is to prevent entry of the drilling fluid into the formation, this being accomplished by a mud having very good wall-building qualities and low water loss and a low specific gravity. This requires that the mud be made from colloidal material almost exclusively. Another method is to deliberately gas-cut the mud so its specific gravity is less than 1. Fluids having an oil base have also been used for this type of completion. The mud can be removed from the hole by running the tubing to bottom and swabbing and then washing with oil.

Killing Wells

The killing of wells requires an adequate supply of mud having sufficient specific gravity to provide a pressure differential.[61] Native clays, colloidal and weighting material are necessary in large quantities. If there is any reason to believe that the mud may enter the formation, a plugging agent should be used. Considerable mud may have to be pumped into the hole before the high-pressure zone is blocked off.

Before attempting to do further work on the well, sufficient time should be allowed to make certain that the well is definitely dead. In several instances, comparatively light wells have gone out of control after being killed. The cause generally was the gas cutting of the mud or a reduction in the fluid column. A light stream run continuously in the hole would have prevented the blowout.

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SAFETY — Marks on Flywheel Prevent Injuries

NUMEROUS pumpers have been seriously injured while cranking flywheel engines used to drive pumping units. There is always a possibility of the pumper becoming entangled in the flywheel when the engine kicks off unexpectedly.

Danger of the operation is increased because the pumper works alone and must crank the engine by himself. In case he receives a broken arm or leg from being kicked, there is no aid which he can summon. Unless he is able to climb into his car and drive to the field office or home, the injured pumper must wait for his relief to find him.

Many of these single-cylinder, four-cycle gas engines with flywheels are still in use although newer properties are being equipped with multi-cylinder gas engines. One company, operating a large number of the engines with flywheels, has introduced a practice which will eliminate almost all of the danger.

This company has checked all of the engines to determine at just what point on the flywheel revolution the engine fires when the piston is coming up on the compression stroke. When the piston approaches to within several degrees of the point where the magneto trips and fires, a 3-in. stripe of white paint is applied to the outer rim of the flywheel at a point level with the center of the crankshaft. Another small patch of paint is put on the hub of the wheel.

The method generally used to crank this type engine is to "climb the spokes." The pumper steps on each successive spoke and shoves it downward. Some pumpers, when they feel they are approaching the firing point, quit climbing the spokes and move the flywheel by hand.

With a mark showing just when the engine will fire, the pumper can turn the flywheel until it approaches the horizontal position and then be prepared to give the spoke one last kick before jumping clear. A safer procedure, providing the pumper has sufficient strength, is to give the wheel its final turn by hand.

Progress in METALS

By W. L. NELSON

New Pipe Standards

THE specifications of pipe products have long been dominated by such designations as "standard weight," "extra strong" or "extra heavy" etc., which were prepared by a committee of the American Society of Mechanical Engineers in 1886. This system served in a satisfactory manner until welding became common. Welding permits the full thickness of the pipe wall to be utilized in withstanding the internal pressure rather than to sacrifice the strength of the pipe because of the weakness of threaded connections.

The new standards prepared by the American Standards Association in cooperation with the American Society for Testing Materials, the American Petroleum Institute, the American Society of Mechanical Engineers, etc., is aimed at bringing order out of some of the confusion that has existed, and to make a single schedule system by which all pipe products can be classified. A tabulation of the essential features of the new system is given on this page. According to this, all pipe products may be classified under 10 schedule numbers and the nominal pipe size. In a most general way, the schedule numbers are based on the pressure that must be withstood. Thus, Schedule 40 pipe is intended to be used up to pressures of 400 lb. per sq. in. at suitable operating temperatures for such pressures. The old system of classification is covered in the new standards, as follows:

Schedule 40 (up to 12-in. diameter) standard weight.

Schedule 80 (up to 10-in. diameter) extra heavy.

The old standards for "double extra strong or heavy" were not retained because they left too great a gap of intermediate conditions and thus forced the use of heavier pipe than is necessary for many situations. Details of allowable pressures, the temperatures tha are anticipated and the relation to the hoop or bursting stress, may be found in the paper by Morgan and Crocker in the Master Plumber of November 1939, or in Heating, Piping, and Air Conditioning, for October 1938. Information is also available in A.S.T.M. Designations A155-36 and A106-40; or in the American Standards Association B 36-10-1939 entitled "American Standard Wrought-Iron and Wrought-Steel Pipe."

Two quotations from the A.S.T.M. bulletin of January 1939 (p. 26) are thought to be particularly significant.

"The aims of the committee in developing the standard were as follows: (1) To establish rational schedules of thickness based on ratios of pressure divided by stress; (2) to include thicknesses suitable for welding; (3) to provide suitable thicknesses in anticipation of development of new processes and materials for manufacturing and erecting piping; (4) to eliminate unnecessary duplication by reducing the large number of intermediate weights of pipe to a few commercially practicable schedules of thickness; (5) to codify the various materials specifications suitable for manufacturing pipe and to arrange the formulation of additional specifications where required.

"The oil industry has been reluctant about adopting the B36 standard through fear that it would curtail the possibility of obtaining odd thicknesses of pipe on special order from the mill. While this possibility is important where several miles of pipe are under consideration for a particular job as frequently is the case for cross-country gas and oil lines, there was no intention of urging too rigorous compliance with the standard, and manufacturers will, no doubt, continue willing to make a special rolling where economical to do so. For small quantities of pipe as in refineries, however, it would seem more profitable in the long run to accept a standard thickness slightly over the minimum computed value, since the lower cost of production with the standard thickness schedules in effect will eventually be reflected in a lower cost to the consumer.

Lighter thicknesses than old "standard weight" are provided so that economical piping systems can be made by welding without sacrificing the strength attained in screwed systems of "standard weight."

In no instances are temperatures exceeding 750° F. or in the region of failure by creep anticipated. This is a special problem in which the responsibility of adopting the necessary thickness is left to the designer. However, suitable thicknesses for most situations, are available in the standard schedule.

Industry is now in the transition stage of adopting the new standards and it would seem to be to the advantage of all to begin using the new standards in as short a time as is practicable.

DIMENSIONS OF WELDED AND SEAMLESS STEEL PIPE

Nominal pipe size	Outside diameter	Nominal wall thickness for schedule numbers									
		Sched. 10	Sched. 20	Sched. 30	Sched. 40	Sched. 60	Sched. 80	Sched. 100	Sched. 120	Sched. 140	Sched. 160
⅛	0.405	....	....	....	0.068	....	0.095	....	....	....	....
¼	0.540	....	....	....	0.088	....	0.119	....	....	....	....
⅜	0.675	....	....	....	0.091	....	0.126	....	....	....	....
½	0.840	....	....	....	0.109	....	0.147	....	....	....	0.187
¾	1.050	....	....	....	0.113	....	0.154	....	....	....	0.218
1	1.315	....	....	....	0.133	....	0.179	....	....	....	0.250
1¼	1.660	....	....	....	0.140	....	0.191	....	....	....	0.250
1½	1.900	....	....	....	0.145	....	0.200	....	....	....	0.281
2	2.375	....	....	....	0.154	....	0.218	....	....	....	0.343
2½	2.875	....	....	....	0.203	....	0.276	....	....	....	0.375
3	3.5	....	....	....	0.216	....	0.300	....	....	....	0.437
3½	4.0	....	....	....	0.226	....	0.318	....	....	....	....
4	4.5	....	....	....	0.237	....	0.337	....	0.437	....	0.531
5	5.563	....	....	....	0.258	....	0.375	....	0.500	....	0.625
6	6.625	....	....	....	0.280	....	0.432	....	0.562	....	0.718
8	8.625	....	0.250	0.277	0.322	0.406	0.500	0.593	0.718	0.812	0.906
10	10.75	....	0.250	0.307	0.365	0.500	0.593	0.718	0.843	1.000	1.125
12	12.75	....	0.250	0.330	0.406	0.562	0.687	0.843	1.000	1.125	1.312
14 o.d.	14.0	0.250	0.312	0.375	0.437	0.593	0.750	0.937	1.062	1.250	1.406
16 o.d.	16.0	0.250	0.312	0.375	0.500	0.656	0.843	1.031	1.218	1.437	1.562
18 o.d.	18.0	0.250	0.312	0.437	0.562	0.718	0.937	1.156	1.343	1.562	1.750
20 o.d.	20.0	0.250	0.375	0.500	0.593	0.812	1.031	1.250	1.500	1.750	1.937
24 o.d.	24.0	0.250	0.375	0.562	0.687	0.937	1.218	1.500	1.750	2.062	2.312
30 o.d.	30.0	0.312	0.500	0.625	....	....	....	....	....	....	....

Steels for Withstanding Hydrogen Sulfide

Abstract—Baukloh, W., and Spetzler, E., "Ueber den Einfluss schwefelwasserstoffhaltiger Gase auf Eisen und auf einige Eisenlegierungen," korrosion u. Metallschutz, Vol. 16, Apr. 1940. The abstract was taken from the September issue of Metals & Alloys.

IN the various processes for hydrogenating coal, hydrogen sulfide is formed and presents a formidable corrosion problem. Materials that might be suitable for the equipment used in this process were investigated. The attacking gases were mixtures of nitrogen with hydrogen sulfide and of hydrogen with hydrogen sulfide; ingot iron and manganese, chromium and aluminum steels were exposed to the gases.

Alloys of iron with aluminum and chromium proved particularly corrosion-resistant. Corrosion by hydrogen-hydrogen sulfide mixture was less at higher temperatures than corrosion by nitrogen-hydrogen sulfide mixtures, while at low temperatures the conditions are reversed. Alloying iron with carbon increases the corrosion resistance but does not give a corrosionproof material; the resistance of a 0.45 per cent C steel to hydrogen sulfide gases was about 30 per cent higher than ingot iron.

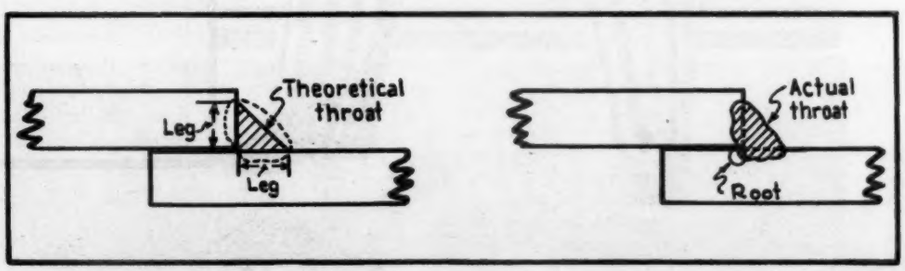
The addition of 1.5 per cent Ni gave a slight improvement for temperatures up to 950° F., although above 1,300° F. such nickel steels were no better than ingot iron, probably because of the relatively low melting point of the nickel sulfide corrosion product. In general, the protective effect of an alloying element is determined chiefly by the physical properties of the solid corrosion products formed. This accounts for the good protection afforded by the aluminum content of some steels. On the aluminum steels, two layers of scale could be observed at 950° F.—an easily removed outer film and a well-bonded inner layer. At 1,300° F., three layers are formed — the outermost smooth and silvery, the intermediate layer soft and pliable, and the innermost, mainly alumina (Al_2O_3), firmly bonded and highly protective.

Alloy Iron Used for Cranks In Pumping Units

THE Nickel Cast Iron News of November 1940 reports the use of nickel-chromium-molybdenum cast iron for the construction of counterbalanced cranks for use on oil-well pumping units. These castings often weigh 1,800 lb. and the metal thickness ranges from 2 to 6 in. In addition to the excellent properties of alloyed cast iron an insurance in this difficult and hard service, the iron can be easily cast and worked. The iron conforms to A.S.T.M. Class 40 specifications, exhibiting a tensile strength exceeding 40,000 lb. per sq. in., a tranverse strength exceeding 2,800 lb. for an 18-in. span, and deflections as high as 0.4 in.

Throat, Root and Leg of a Fillet Weld

The tentative definitions of welding terms of the American Welding Society define the throat, the root, and the leg of a fillet weld by means of sketches similar to the one shown here.



Petroleum and other Defense Industries

Highlights of Nation's Electric Power Supply

- Present utility power generating capacity of all kinds is approximately 42 million kilowatts, or over 4 times that of 1917.
- Over 40 per cent of the above capacity is in excess of the present highest peak load requirements.
- 87 per cent of the total generating capacity is privately owned and operated.
- 72 per cent of the total capacity is represented by steam plants and 28 per cent by water power.
- There are approximately 300,000 circuit miles of high voltage lines of 11,000 volts or higher, comprising a widespread interconnecting electric supply system throughout the nation.
- There are over 275,000 trained and experienced employees of electric light and power companies who stand ready to do their jobs efficiently in any emergency.

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Electric Power Industry

Yes, the Utility Electric Power Companies are more than ready, willing, able and experienced to fulfill the biggest job awaiting them.

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Millions of barrels of oil are lifted yearly and pumped thousands of miles thru pipe lines by Utility Electric Power. Great modern refineries are operated by it, too.

At all times during the rapid expansion of the petroleum industry, Utility Electric Power has been available by a far greater capacity than has been needed. This is the policy of the privately owned and operated electric power companies—to be ready for all emergencies which may demand service and power in excess of normal consumption.

And just as the Utility Electric Power Companies are equipped to handle the biggest job in the oil industry, so are they ready to serve Uncle Sam in his preparedness program.

Today the electric power industry *has a more than 40 per cent surplus capacity available.* This is in addition to the vast amount of power already being served the government for carrying on its gigantic activities.

With this assurance of adequate electric power—available from the Atlantic to the Pacific; from Canada to Mexico—Uncle Sam can be saved the tremendous cost of establishing additional power facilities. The billions of dollars thus saved can be used for important defense projects.

With these facts clearly in view, the electric power industry joins hands with the petroleum industry in saying "We're more than ready to serve you, Uncle Sam!"

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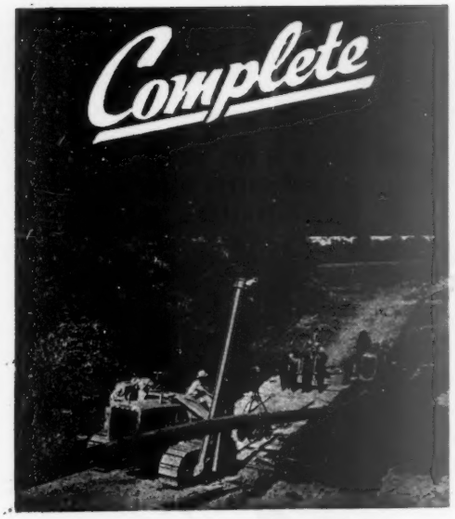

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Pipe-Line Activity

C. R. Musgrave Directs Phillips Gasoline Pipe-Line Operations

All gasoline pipe-line activities of Phillips Petroleum Co. have been combined into a new department designated as the gasoline pipe-line department which is under the direction of C. R. Musgrave, vice president, in charge of traffic. This department will operate the gasoline pipe line from Borger, Tex., to East Chicago, Ind.; the new set-up places under one authority the transportation facilities used by the company in the distribution of its manufactured products. Mr. Musgrave has heretofore had charge of the gasoline pipe-line system from East St. Louis, Ill., to East Chicago, Ind., as well as railway, barge, and truck traffic. A. W. Hubbell, formerly in charge of the gasoline pipe-line system from Borger, Tex., to East St. Louis, Ill., is manager of the new department and S. S. Learned is assistant manager.

Before joining the Phillips organization 19 years ago as assistant traffic manager, C. R. Musgrave spent 12 years in various positions in the operating and traffic departments of the Santa Fe Railroad. He was appointed traffic manager in 1923, general traffic manager in 1927, and vice president in charge of transportation in 1930.

Toronto Pipe Line Lets Contract to Sheehan

Toronto Pipe Line Co. awarded contract to Sheehan Pipe Line Construction Co. to build a system for the transportation of crude oil in an area which serves sections of southern Illinois and Indiana. The system will include 22 miles of 4 and 6-in. gathering lines and 8 miles of 6-in. main line. The main line will terminate at the Albion station of Illinois Pipe Line Co., which will receive deliveries from the system.

Toronto Pipe Line Co. will move oil for the British American parent company from the Keensburg, Griffin, and Albion pools. In addition to what has been planned for the present project, consideration may be given later to laying other lines which will serve as laterals. Deliveries of pipe have been arriving for the job; the contractor has moved in equipment and crews.

Texas System Announces New Basis for Computing Purchases

Texas Co. and Texas Pipe Line Co. have made public the following statement:

"On January 1, 1941, Texas Pipe Line Co. filed with the Interstate Commerce Commission new tariffs affecting interstate shipments of crude petroleum originating on its lines in the State of Oklahoma in which rule No. 6 has been amended to read as follows:

"Crude petroleum tendered to this company for transportation shall be gaged and tested by a representative of this company prior to its receipt from the shipper; but the shipper shall have the privilege of being present or represented at the gaging and testing. Quantities will be computed from correctly compiled tank tables showing 100 per cent of the full capacity of the tanks in all oil fields in the State of Oklahoma. Corrections will be made for temperature, allowing or deducting at the rate of 1 per cent for every 25° in temperature above or below 60° F. This company will deduct the full per cent of basic sediment, water, and other impurities as the centrifugal or other tests may show. A further deduction of 1 per cent will be made for evaporation or other unavoidable loss during transportation and the net balance will be the quantity deliverable by this company and the transportation charges will be assessed in accordance therewith.

"The new tariffs are to become effective February 1, 1941. Simultaneously, Texas Pipe Line Co. is adopting same basis of accounting for quantities of oil received by them in the State of Oklahoma for intrastate shipment. The effect of the foregoing is that beginning February 1, 1941, all receipts of crude oil by Texas Pipe Line Co. in the State of Oklahoma, for either intrastate or interstate shipment, will be accounted for on the basis of 100 per cent tank tables.

"It has been announced by Texas Co. that beginning February 1, 1941, quantities of crude oil purchased by it in the State of Oklahoma and also in the State of Kansas, will be computed by use of 100 per cent tank tables."

The practice of Texas Co. has been to compute crude oil purchased in this area by the use of 97 per cent tank tables.

Pure Puts Cumberland Line in Operation

Pure Oil Co. has started moving 2,500 to 3,000 bbl. of crude oil per day from wells in the Cumberland pool, Denison Dam reservoir area, Oklahoma, through the recently completed 16-mile, 6-in. line of Pure Transportation Co. The line transports shipments to Texas Pipe Line Co., which will make final delivery to the Pure refinery at Nederland on the Texas Gulf Coast.

Pure has posted a flat price of $1.02 a barrel for the oil, eliminating the 17-cent-a-barrel reduction it made in December 1940. The new posting takes care of the former cost of moving the oil by rail to a Stanolind Pipe Line Co. junction.

Socony-Vacuum Plans Line From Roxbury Pool

WICHITA, Kans.—Socony-Vacuum Oil Co., Inc., announced plans for construction of a 12-mile 4-in. pipe

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Pipe-Line Personalities . . . . John B. Sheehan

JOHN B. SHEEHAN

JOHN B. SHEEHAN, secretary and treasurer of the Sheehan Pipe Line Construction Co., Tulsa, comes from a family of pipe liners. The company he heads grew out of the activities of his father, John Sheehan, and was developed in close association with his brother, Raymond J. Sheehan, who died September 19, 1939.

Mr. Sheehan left Bradford, Pa., when he was 17 years old. He worked as tool dresser in the West Virginia oil fields for 2 years, and then in 1904, went to Oklahoma where he continued in the same employment. Soon he joined his father's organization, which contracted work on a line between Independence and Havana, Kans., on a line to the Tulsa field, and on the first 4-in. line to the Cleveland, Okla., field. Late in 1904, he joined Prairie Oil & Gas Co. and worked at several jobs, including work on a tank-farm connection gang near Ramona, Okla., and firing boilers at Bartlesville station. In 1906 he was tool dresser at New York Oil & Gas Co. 1 Vandervort, near Caney, Kans., a 90,000,000-cu. ft. gas well which at the time was the largest in the Mid-Continent. The well was ignited during an electrical storm and burned for a month.

From 1906 until 1922 Mr. Sheehan was connected with the management of his father's contracting business and also operated a brick plant at Bradford, Pa. After his father's death in 1921, Mr. Sheehan came west again and with his brother, the late R. J. Sheehan, organized Sheehan Pipe Line Construction Co. The firm has been active in the Mid-Continent area and, the last few years, it has been very active in the states of Missouri, Illinois, Indiana, Ohio, and Michigan. At the present time the company is constructing lines that bypass the munitions plant being built by the Government at Wilmington, Ill.

line which will connect the Roxbury pool with the Ritz-Canton station, Kansas, of the firm. The refinery outlet of the new line will be the White Eagle plant at Augusta, in Butler County, Kansas. This new line provides northeastern McPherson County with its second pipe-line outlet, Bay Petroleum Co. already having a line to its McPherson refinery.

Gas Service Co. Enlarges System at Augusta

Gas Service Co. of Augusta, Kans., at the present time is laying a 4-in. main, replacing a 2-in. main on the east side of Augusta.

Eastern Pipe-Line Deliveries Set New Record in 1940

NEW YORK.—Deliveries of crude oil through the nine pipe lines in the former Standard Oil eastern group established a new record in 1940. Totaling 224,438,000 bbl., they showed an increase of 38 per cent compared with the previous year, the former peak. All lines in the group had increased deliveries last year.

December deliveries of these lines aggregated 18,112,000 bbl., an increase of slightly more than 9 per cent compared with November, and 10 per cent higher than in December 1939. In the accompanying tabulation is shown the December and 1940 deliveries of the nine lines with comparisons for similar periods in 1939, in thousands of barrels:

	December		12 months	
	1940	1939	1940	1939
Buckeye	6,423	5,193	81,171	48,672
Eureka	776	811	8,321	6,249
Illinois	4,710	5,276	68,473	56,676
Indiana	1,950	1,599	21,058	20,905
Natl. Transit	1,318	1,199	15,551	12,110
N. Y. Transit	740	526	6,985	3,885
Northern	758	445	7,945	3,546
Southern	324	342	3,404	1,676
S. W. Penna	1,113	1,050	11,530	8,837
Total	18,112	16,441	224,438	162,556
Daily average	584	530	613	445

Humble Lets Contract for Hawkins Field Outlet

DALLAS, Tex.—Humble Pipe Line Co. has awarded contract to Latex Construction Co. for the laying of 6 miles of 6-in. crude-oil pipe line from the new Hawkins field, Wood County, Texas, to a connection with the company's Van field-Longview line which transports for delivery at the Gulf Coast.

Stanolind Plans Expansion Of Lines in Oklahoma

For carrying out a program to expand facilities, Stanolind Pipe Line Co. plans construction of four loops of 8-in. and 12-in. in southern Oklahoma totaling more than 60 miles.

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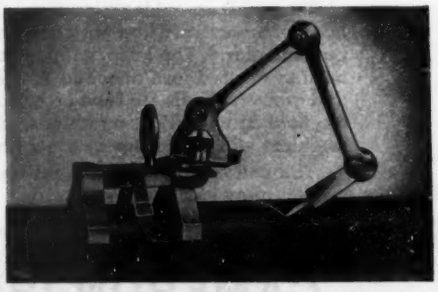

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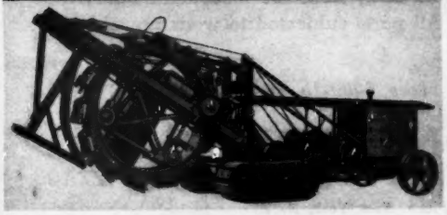

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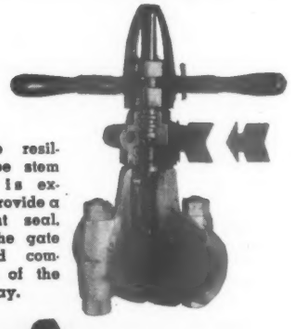
Buckeye Ditcher

THE EXCEPTIONAL performance record of Cameron Flex-Seal Mud Valves is due, largely, to this renewable resilient flow-way insert, or "rubber doughnut." It absorbs, at an extremely slow rate of wear, the cutting action of abrasive-laden fluid. When it is finally worn out after long service, it may be replaced in the field quickly and easily by any member of the drilling crew. No special tools are needed and the new insert costs only a few dollars.

The Cameron Flex-Seal Mud Valve has no delicate metal-to-metal seals. The resilient insert provides a pressure-tight seat for the gate and seals the two-piece body of the valve. The stem packing is of lip-type construction which requires no packing gland. The hubs, with threaded, flanged, welded-on or any special connection desired, are attached to the body by means of interlocking shoulders and grooves. Thus, the type of end connections on the valve may be changed in the field at will. Also, no unions are required when making up a manifold as the hubs will swivel freely when the four body bolts are loosened slightly.

The entire valve is of forged steel. All parts subjected to wear are of heat-treated alloy steel.

Available in 2", 3" and 4" sizes, 6000-lb. test pressure



OPEN — The resilient lip type stem packing is expanded to provide a pressure-tight seal. Note that the gate is retracted completely out of the flow-way.

CLOSED—The heat-treated forged alloy steel gate is firmly embedded in the resilient flow-way insert. Note the indicator stem which reveals the extent of wear on the insert.

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FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

Drilling activity remains at a level approximately 20 per cent below that of last year but there are signs that this lull will not be long continued. A successful Trenton test may mean another campaign in the Salem field and the Hawkins boom appears well under way with permits for 100 wells already applied for. In California, operators have benefited by an almost complete absence of discoveries for a year and a half but there are prospects of a town-lot campaign in Inglewood if a test now nearing the sand is productive. Operators in western Kansas are starting wildcats daily in a search for extensions to the productive area and in Southwest Texas a new field has been opened up 40 miles from the nearest production. Given proper market conditions, 1941 is showing signs of being one of the most active and successful years in oil history.

ILLINOIS: Rossi's Trenton test in the Salem pool is reported flowing from 4,505 to 4,600 ft. If this well proves of commercial importance, it will set off some 70 offsets. The St. Peter maintains its reputation as a nonproducer by two failures, one at Sandoval and the other at Carlyle. An Edwards County McClosky pool is in prospect and Franklin County is assured of a pool as Adkins 1 Orient Coal Co. made an average of 150 bbl. in two 24-hour tests (p. 77).

SOUTHWEST TEXAS: Producers Corp.'s wildcat near Carrizo Springs, Dimmit County, is a probable pool opener whose importance is indicated by the fact that it is about 40 miles from the nearest production—the Pearsall field of Frio County. Agua Dulce and Riverside, both in Nueces County, were extended and an offshore test in St. Charles Bay has logged several showings of oil and gas (p. 73).

CALIFORNIA: The deep test in the Buena Vista Hills section of the Midway-Sunset field is nearing the Rio Bravo zone. If successful, it will open up a large section to prospecting in this zone. The Inglewood area is being closely watched as another test nears the Sentous deep pay. A successful well will start town-lot development which may prove disastrous to California's price structure. A new dry-gas field is in sight in the north-central part of the state, in San Joaquin County (p. 75).

MICHIGAN: Gulf's deep test in Bay County is under way again after a new rig was set up. Oil produced from this well is bringing Michigan's top price of $1.48 a barrel (p. 82).

LA-ARK-TEX: The Joaquin gas field, mostly in Shelby County, Texas, was extended well into De Soto Parish by a 177,000,000-cu. ft. well (p. 83).

KANSAS: The Arbuckle has been found productive in the Iuka field, Pratt County. Several wildcats have been staked in western Kansas indicating growing interest in extending production along the Barton arch and prospecting the flanks of this major uplift (p. 79).

CANADA: After two failures, Standard Oil Co. of British Columbia has brought in a commercial producer in the Steveville area of Alberta. This field lies in the plains area northwest of the old Medicine Hat gas field (p. 90).

EASTERN TEXAS: A new townsite area in eastern Texas is receiving a spirited play as the result of town-lot drilling. Closely following the Hawkins boom in Wood County comes the town of Frankston in Anderson County. A wildcat in the community has reported shows of oil in the sub-Clarksville sand above the Woodbine and is preparing to set casing for a test before drilling on to the Woodbine sand (p. 66).

WEST TEXAS: A general trend of deeper drilling is gathering momentum throughout western Texas in the wake of several new deep discoveries both in the southern part of the basin and in the north part. During the week new deep tests were planned for Pecos County, Ward County, Andrews County, Ector County and even far north in Cochran County (p. 70).

NORTH TEXAS: To keep deep wildcatting at a rapid pace into the new year, there were a total of eight new deep exploratory tests registered in four different counties during the week, these being Jack, Montague, Clay and Wilbarger counties. The latter county was definitely assured of a new 2,900-ft. field when a testing wildcat 3 miles west of the town of Harrold halted to await official gage (p. 84).

WEST CENTRAL TEXAS: Giving 1941 a good start, the West Central Texas area reported two new field discoveries during the week. Both are producing from the Swastika sand section. They are located one each in Jones and Fisher counties (p. 84).

SOUTHEAST NEW MEXICO: A new field was indicated near Lake McMillan in central Eddy County at the close of the week. The promising wildcat, which swabbed 27 bbl. of oil in 18 hours, is Fulton 1 Johnson, 22-19-27 (p. 70).

TEXAS GULF COAST: Humble's wildcat near La Ward, Jackson County, is showing oil in the Frio and is being tested. W. R. Davis' Wilcox well in Colorado County flowed about 60 bbl. distillate through various chokes. An active campaign will result from this new Wilcox development. Old Ocean and Alta Loma, Brazoria County, were extended but Red Fish in Galveston Bay was bounded by poor showings a mile south of the discovery (p. 91).

LOUISIANA GULF COAST: A wildcat northwest of the Grand Lake field in Cameron Parish is testing shows found in three sands. Schooner Bayou, Vermilion Parish, and Lake Salvador, St. Charles Parish, are extended (p. 86).

OHIO: Another test has been staked in the northeastern part of the state. It is headed for the Clinton gas sand (p. 68).

WYOMING: Several years ago, the Maverick Springs field was partially developed and important reserves of black oil were proven. However, owing to lack of market, the field was not produced. The Government has ordered operators to produce or pay royalty to the Indian lessors and many of the major companies owning leases are turning them over for operation to independents (p. 88).

COMPLETIONS IN ALL FIELDS . . .

(Week ended January 11, 1941)

	Oil	Gas	Dry	Total	1941 total comp. to date	1940 total comp. to date
N. Y., Pa., and W. Va.	68	17	3	88	173	149
Ohio	8	8	5	21	41	27
Indiana	6	2	2	10	10	10
Kentucky	4	0	3	7	15	11
Illinois	42	0	19	61	112	129
Michigan	5	0	12	17	28	40
Kansas	25	1	5	31	50	46
Oklahoma	14	1	6	21	57	60
Texas:						
North Central Texas	20	1	8	29	94	107
West Texas	30	1	2	33	66	65
Texas Panhandle	10	0	0	10	14	20
Eastern Texas	24	0	4	28	41	22
Texas Gulf Coast	11	0	2	13	30	53
Southwest Texas	17	1	11	29	40	71
Total Texas	112	3	27	142	285	338
North Louisiana	5	1	1	7	20	33
Louisiana Gulf Coast	16	1	3	20	26	37
Total Louisiana	21	2	4	27	46	70
Arkansas	2	0	1	3	7	12
Montana	5	0	0	5	7	12
Wyoming	1	0	0	1	8	8
Colorado	0	0	0	0	0	2
New Mexico	1	0	1	2	13	26
California	19	0	2	21	43	44
Nebraska	0	0	3	3	6	0
Mississippi	2	0	0	2	6	0
Total United States	335	34	93	462	918	984
Total previous week	335	39	82	456		
Week ended Jan. 13, 1940	334	45	112	491		

Townsite Boom Developing at Frankston, Anderson County

By R. MARNE SANFORD

DALLAS, Tex., Jan. 13.—With the Hawkins townsite oil boom gaining momentum daily in Wood and surrounding counties, a new area came to the front last week as a new townsite boom developed in Frankston in Anderson County.

Contrary to the nature of the Hawkins boom which started only a few weeks ago, there has not been a drop of oil discovered at the new Frankston area. The entire basis or foundation for which townsite lots are bringing as much as $600 is the fact that a wildcat is drilling in the townsite and has been given a fair chance of finding production; that together with the fact that if oil is under the town of Hawkins it can just as easily be under the town of Frankston. The townsite drilling operation is R. H. & W. Oil Co. 1 Saunders, Joe Ferguson Survey, about 1 block east of the Frankston schoolhouse. With hole bottomed at about 5,000 ft., some 500 ft. short of its contract depth, an electrical survey was being made at the close of the week which may substantiate reports that oil shows were found in the sub-Clarksville sand just above the Woodbine. Tentative plans are to set casing above the sub-Clarksville sand before drilling into the Woodbine section.

New Wildcatting for District

Somewhat augmented by the recent Hawkins discovery, several long-known structures throughout the district are being tested or marked for tests in the near future. In Rusk County, Skelly Oil has staked a new wildcat in the Mount Enterprise area as its 1 F. M. Markey, 4 miles southwest of the town of Mount Enterprise and located 2,460 ft. from the south and 660 ft. from the east lines of a 205-acre tract in the A. Nolan Survey. Immediate drilling is scheduled. The company has been doing preliminary lease and exploration work in the area for the past few months.

Plans have been again brought to the fore in the Henderson area of Rusk County, where Delta Drilling Co. has been for several months preparing to drill a deep 8,500-ft. test. Plans were at the close of the week to start the test immediately. It would be 1 Kangerga Brothers, R. Lane Survey, 3 miles north of the town of Henderson. The drilling company has obtained a right-of-way for a gas-fuel line from the East Texas field to the drill site.

In Smith County, Tracy Flanagan and W. R. Nicholson, Longview, have staked location for a new wildcat in the Red Springs area of northern Smith County. Location is to be on the H. P. Hale tract, Isaac Brock Survey. The site is several miles south of the Hawkins discovery to the north and in Wood County, however, it is another prospect upon which Humble Oil & Refining Co. holds the majority of the acreage and is figured in the financing of the new test to be drilled.

In Rains County, immediately west of Wood County in the northern part of the East Texas basin, Plains Production Co., Dallas, is reported preparing to start at once its Homer Foster, in the M. Cummings Survey. The location is a mile northwest of the town of Alba and it will be drilled to the Paluxy sand.

SUMMARY OF COMPLETIONS

East Texas Field

(For past 2 weeks)

	No.	Bbl.	Footage
Oil wells: Gregg County	16	*530	57,089
Rusk County	2	*19	7,373
Upshur County	1	*40	3,668
Total	19		68,130

*Per hour.

East Central Texas

Oil wells: Long Lake field	2	142	10,536
Talco field	1	280	4,270
Dry holes: Fields	1		3,012
Wildcats	2		2,085
Total	6		19,903

Hawkins Geared for Rapid Development

Determined not to let the industrial development of the community lag behind the oil development, the town of Hawkins in Wood County was progressing rapidly toward the establishing of civic enterprises to aid the oil activity and the influx of oil operators. Among the enterprises under way are new business houses, new road systems, new electrical systems, the establishment of a telephone exchange, a community water system, and others.

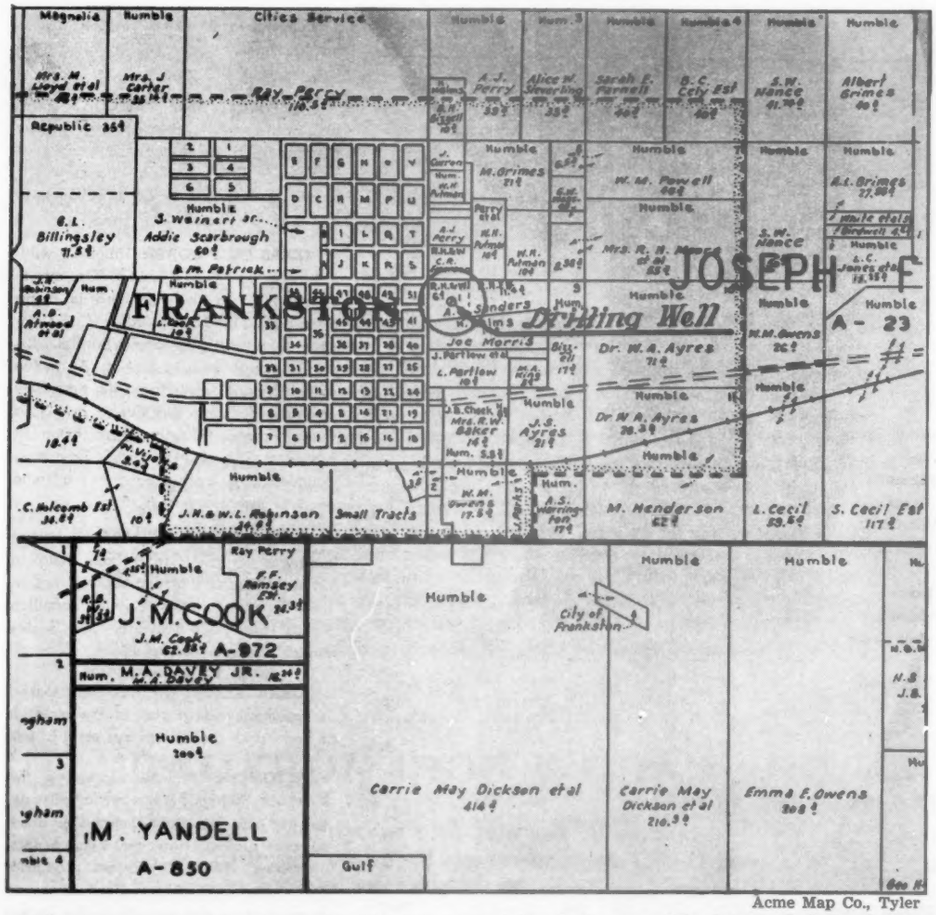
Meanwhile drilling had started at several more of the new locations for the area and other locations had been staked to take their places on the pending development list. Centering most attention in the play was the Hollandsworth & Orr 1 Robbin, in the Hawkins townsite and just northeast of the Rotondi discovery well. An electrical survey of the hole picked first sand at 4,450 ft., gas sand at 4,469 ft., and oil sand at 4,568 ft. The top of the sand section is 40 ft. higher than in the townsite discovery just 300 yards to the southwest. No. 1 Robbin is bottomed at 4,799 ft. and is cementing casing to complete through perforations. Rig from this test is to be moved just 100 ft. west to the Johnson 1 Lynch, where derrick has been up for more than a week.

Meanwhile the Bobby Manziel 1 Bell, unruly gas well just northwest of town, has been disposed of permanently. The well was brought under control early the past week only to have gas-seeping fissures develop as far as 100 ft. from the well. Cratering was feared and for this reason it was ordered plugged to bottom with cement. Manziel is preparing to start a twin well to the east 150 ft.

New starters for the area included a test 1½ miles northeast of the town. It is Bill Urbanic of Longview 1 J. A. Snider, NE cor. of a 73-acre tract in the Castleberry Survey.

Also another new operation is preparing to start near the plugged wild gas well. It is A. A. Folsom 1 Prince, Wideman Survey, on a 10-acre tract some 2,000 ft. southwest of the Manziel 1 Bell. Contract has been let and rig is being moved in for immediate drilling.

With January 20 set as the date for a hearing on the spacing pattern and field rules for the Hawkins area, permits for new tests continue to file into the Railroad Commission offices. They were estimated at near 100 at the close of the week.



Acme Map Co., Tyler

Producing eastern Texas' latest townsite oil boom is a test drilling in the town of Frankston in Anderson County. No oil has yet been discovered, however, lease and royalty prices are mounting and the operation is gathering a considerable following. Shows of oil have been reported in the sub-Clarksville sand and casing is being cemented for a test. It will later drill on into the Woodbine sand

EAST TEXAS FIELD COMPLETIONS

(Past 2 weeks)

Gregg County

Longview area: Amerada 5 Smith, 20 bbl. in 45 minutes, 3,575-83 ft.
Bailey & Tremble 11 G. Jones, 57 bbl. an hour, 3,565-3,645 ft.
G. H. Vaughn 11 G. Jones, 60 bbl. an hour, 3,541-3,651 ft.
Kilgore area: Hamil & Smith 2 Heard, 50 bbl. in 4 hr., 3,537-72 ft.
Hamil & Smith 3 Heard, 80 bbl. in 4 hr., 3,546-68 ft.
Hamil & Smith 10 J. A. Knowles, 60 bbl. in 4 hr., 3,535-45 ft.
J. F. Jenkins 6 J. S. King, 20 bbl. an hour, 3,551-71 ft.
L. & M. Oil 3 Aycuff heirs, 30 bbl. in 30 min., 3,555-77 ft.
Overton Refining Co. 19-B I.&G.N.R.R., 120 bbl. in 4 hr., 3,542-75 ft.
Overton Refining Co. 24-B I.&G.N.R.R., 150 bbl. in 5 hr., 3,541-65 ft.

(Continued on Page 87)

Development of Charlson Gas In Chickasha Field Increases

By ROBERT INGRAM

WITH natural gas coming into its own as good paying production, operators were turning their attention this week to the Chickasha sector of Grady County where four important Charlson tests were under way.

Carter Oil Co. discovered the Charlson gas production in a deep test in SE SW 26-5-8w. This week Skelly Oil Co. 5 Edmundson, SW NW NW 23-5-8w, was drilling below 3,573 ft. and approaching the pay zone. It is east of two big gassers of Sinclair Prairie Oil Co. Sinclair Prairie was also rigging up rotary tools for 5 Charlson, SW SE 22-5-8w, and Magnolia Petroleum Co. 3 Farwell, SW SE 26-5-8w, and Stanolind 8 Sanford, SW SW 23-5-8w, were drilling.

Production as high as 200,000,000 cu. ft. has been found in the area.

Meantime arrangements were completed for a pipe line to be built by the Sinclair Refining Co. to Selden Henry, J. H. Harvey et al 1 Dudgeon, NE SW SE 36-12-9e, the discovery in Okfuskee County which ushered in the new year.

AVERAGE DAILY PRODUCTION

LEADING OKLAHOMA FIELDS

	Jan. 11	Jan. 4
Allen	4,800	4,800
Billings	6,225	6,250
Burbank	7,225	7,225
South Burbank	7,350	7,325
Balance Osage	16,750	16,500
Blackwell district	3,350	3,350
Bristow-Slick	6,300	6,225
Chandler	1,025	1,025
Crescent	1,975	1,975
East Cromwell	1,750	1,675
Cromwell	2,825	2,800
Cushing-Shamrock	8,825	8,800
Duncan	3,550	3,550
Edmond	3,575	3,600
Fish	2,875	2,850
Fitts	14,100	13,900
Jesse	2,050	2,025
Graham-Fox	2,200	2,200
Gray	850	825
Healdton	8,300	8,300
Hewitt	7,475	7,525
Keokuk	2,675	2,650
Konawa	1,000	1,000
Lucien	6,450	6,425
Moore	1,050	1,050
Northeastern counties	17,000	16,900
Oklahoma City	84,750	102,075
Olympic	1,750	1,750
Ramsey	3,500	3,500
Sasakwa	1,375	1,750
Sholem-Alechem	2,550	2,550
Seminole district:		
Bowlegs	6,450	6,425
Carr City	2,175	2,150
Dora	1,575	1,550
Earlsboro	3,875	3,875
East Earlsboro	1,725	1,725
South Earlsboro	525	500
Little River	6,550	6,550
East Little River	625	625
Mission	1,250	1,250
Seminole	6,225	6,225
East Seminole	1,025	1,025
Searight	1,825	1,800
Total Seminole	33,825	34,150
St. Louis-Pearson	21,450	21,400
Tatums-Tussv	5,050	5,200
Tonkawa-Garber-Thomas	3,575	3,350
Wewoka	1,550	1,525
Yale-Jennings	3,050	3,050
Total Oklahoma	388,275	404,625

No official gage has been made as yet, but when opened for 7 hours the well flowed 383 bbl. of 35.5-gravity oil. Four 210-bbl. tanks have been filled. The same operators plan an offset test soon.

In Okfuskee County Deep Rock Oil Co. took over Fred Coogan 1 Earl Davis, a wildcat in SW SE NE 20-11n-9e, and was drilling deeper at 4,180 ft. Coogan drilled to the Wilcox sand at 4,105-47 ft., set casing at 4,059 ft. and got only a show of oil with water when the plug was drilled.

North of Okemah Portable Drilling Co. 1 Lena Nelson, NE SE SW 1-11-9e, had the Wilcox at 4,098 ft., drilled to 4,108 ft., and then perforated in the Gilcrease without success and abandoned the well.

On the south edge of the East Cromwell pool, Shell Oil 1 Brewer, SE SW NW 1-10-8e, had the Cromwell at 3,532-82 ft., ran an electric log, but went ahead and was drilling below 3,890 ft. in shale and lime.

An extension of heavy-black-oil production in the Laffoon area of Lincoln County seemed assured at Kerlyn Oil et al 1 Froug-Smullian, SE NW NW 2-13-6e. It filled 120 ft. in 30 minutes and the operator began testing.

In Kiowa County Gied Oil et al apparently had a failure in 1 Howard, SW SW NE 20-17-17w, ½ mile east of the Hobart field. Several attempts to make a producer and open a new horizon for the district brought no results. The semiwildcat drilled to 2,556 ft. in the Arbuckle and got salt water. It plugged back and perforated casing from 2,170-2,505 ft. in several attempts but got nothing. The latest plugback was to 1,200 ft. where the formation was shot with 90 qt. of nitro without results.

A mile south of the Hobart pool, Artie Baker was drilling ahead at 1 Coakley, NW NE SE 30-7-17w. At 1,231 ft. it bailed a few barrels of oil with a lot of water.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Cumberland	2	265	10,148
Cement	4	315	11,069
Dill	1	552	3,622
West Frederick	2	1,870	10,250
Other fields	5	240	16,999
Gas wells: Fields	1	*2.8	1,204
Dry holes: Cement	1	.....	3,535
Wildcats	5	.....	21,203
Total	21	.....	78,030
Recompletions: Coyle	4	1,053	.....
Dill	1	25	.....
Other fields	1	*4	.....
Total	6	.....	.....

*Million cu. ft.

OKLAHOMA COMPLETIONS

Bryan-Marshall Counties

Cumberland pool: Pure 1 Little 204, NE SW 28-5s-7e, flowed 167 bbl. through 10/64-in. choke, casing 4,888 ft., first sand 4,892 ft., second sand 5,012 ft., T.D. 5,092 ft.

Pure 1 Thomas 203, SW NW NE 28-5s-7e, flowed 98 bbl. through 11/64-in. choke, casing 4,914 ft., first sand 4,803 ft., second sand 5,012 ft., T.D. 5,056 ft.

Caddo County

Cement pool: Pace 3 Davis, SE NW 6-5n-9w, pumped 10 bbl., perf. 3,338-3,405 ft., acid, casing 3,460 ft., T.D. 3,464 ft.

Ohio 7 Rigney, SE SE 12-5-9w, dry, T.D. 3,535 ft., no sand, lost collar and bit.

Miller 4 Garner, SE SW 26-6-10w, potential 252 bbl. flowing, casing 3,887 ft., perf. 3,565-76 ft., Rowe 3,590-3,620 ft., T.D. 4,362 ft.

Magnolia 9 Medrano, SW NW SW 36-6-10w, pumped 53 bbl., casing 3,240 ft., sand 3,240-43 ft., T.D. 3,243 ft.

Creek County

Slick district: Martin 1 Freeman, NE SE NE 8-14-10e, pumped 20 bbl. oil, 3 bbl. water, casing 2,923 ft., Woodford 3,130 ft., Misener 3,162-77 ft.

North Tibbetts: Springer 1 Jackson, SW NE SW 20-15-9e, pumped 24 bbl. oil, 3 bbl. water, casing 3,342 ft., shot Wilcox at 3,662-74 ft.

Wildcat: Trigg 1 Jennings, NW SW SE 18-16-8e, dry, T.D. 3,735 ft., Wilcox 3,697 ft., P.B. to Misener at 3,605 ft.

Bruce pool: McAdams 2 Lozier, SE NE NE 36-17-9e, pumped 25 bbl., casing 2,753 ft., T.D. 3,335 ft., P.B. 2,766 ft.

Hughes County

Holdenville, West: Winona 3 Jackson, NW SE NE 18-7-8e, pumped 75 bbl., casing 4,194 ft., T.D. 4,298 ft., P.B. 4,220 ft., shot Wilcox 4,211-19 ft.

Wildcat: Hinton 1 Brittain, NE SE SE 6-6-10e, location abandoned.

Latimer County

Wildcat: Whitehead 1-B Allen, NE SW 11-4n-19e, old well drilled deeper from 890 ft. to 1,055 ft., lime 1,054-55 ft., show of gas, temporarily abandoned.

Lincoln County

Wildcat: Allen 1 Seadore, SE NE 2-14-3e, cellar and pits, abandoned.

Okfuskee County

Wildcat: Mid-Continent 1 Stokes, SW SE SW 20-13-8e, dry, T.D. 4,304 ft., Wilcox 4,202 ft.

Fain 1 Castle, NE NW SE 36-13-8e, dry, T.D. 4,299 ft., Wilcox 4,189 ft.

Burke-Greis 1 Scott, C NE SW 20-10-10e, old well drilled deeper from 2,802 ft. to 3,260 ft., 4,000,000 cu. ft. gas, casing 3,190 ft., Cromwell 3,190-98 ft., sand 3,212-60 ft.

Weleetka pool: Doak 4 Lowe, SE NE 16-10-11e, 2,750,000 cu. ft. gas, casing 1,193 ft., sand 1,193-1,204 ft., T.D.

Dill pool: Seran 1 Seran, C SE NW 2-11-8e, old well P.B. from 3,931 ft. to 3,400 ft., casing 3,220 ft., shot 3,354-82 ft., deepened to 3,405 ft., flowed 25 bbl.

Droppleman 6 Dill-C, SW SE NE 34-12-8e, flowed 552 bbl., casing 3,586 ft., Cromwell 3,590 ft., T.D. 3,622 ft.

Wildcat: Burke-Greis 1 Rose, NW NW 10-12-9e, flowed 30 bbl. and est. 17,000,000 cu. ft. gas, casing 3,893 ft., Hunton lime, 3,892 ft., T.D. 3,913 ft., acid.

Pawnee County

Cleveland pool: Coronado 5 School land, SW NW 16-21-8e, old well drilled deeper, dry, old T.D. 1,724 ft. in Cleveland, deepened to 2,442 ft.

Payne County

Coyle pool: Texas 1 Graham, E½ NE SE 11-17-1e, old well P.B. from 4,938 ft. to 4,768 ft., perf. 4,631 ft., flowed 346 bbl. in 11 hr.

Texas 1 Minnich E½ NE NE 11-17-1e, old well P.B. from 4,962 ft. to 4,789 ft., perf. 4,660-85 ft., flowed 192 bbl. in 4 hr.

Magnolia 1 Cain, W½ NW SW 12-17-1e, old well P.B. from 4,878 ft. to 4,715 ft., perf. 4,617-37 ft., flowed 165 bbl. in 3 hr. through ¾-in. choke.

Magnolia 2 Cain, E½ NW SW 12-17-1e, old well P.B. from 4,863 ft. to 4,677 ft., perf. 4,585-4,605 ft., flowed 350 bbl. in 3 hr. 45 min.

Pontotoc County

Beebe pool: Eason 1 Duncan, SW NW SW 26-5-4e, pumped 96 bbl. oil and 9 bbl. water, casing 2,515 ft., perf. 2,340-78 ft.

Pottawatomie County

Wildcat: H. Phillips 1 Griffenstein, NE NW 22-8-2e, dry, Wilcox 5,813 ft., T.D. 5,839 ft.

Seminole County

Wildcat: Little River 1 Jarvis, SW SE NE 18-8-7e, dry, Cromwell 3,233-38 ft., T.D. 3,238 ft.

Tillman County

West Frederick pool: I.T.I.O. 2 Zeller, S½ S½ SW 36-2s-19w, potential 141 bbl. with 912 bbl. water based on 2-hr. pumping test, Arbuckle 5,107 ft., casing 5,108 ft., T.D. 5,177 ft.

I.T.I.O. 1 Banker, E½ E½ NE 2-3s-19w, potential 1,729 bbl., based on 2-hr. open flow through casing, casing 5,073 ft., Arbuckle 5,107 ft., T.D. 5,177 ft.

OKLAHOMA DRILLING REPORT

Caddo County

Ray Stephens 1 Lankford ..... SE SE NW 6-6-9w
Drilling 5,200 ft.

Creek County

R. R. Kirchmer 1 Carson ..... NE SE NW 23-17-9
Oswego 1,780 ft., sand 1,845-75 ft., show oil and gas, show oil in sand 2,387-92 ft., underreaming 6-in. 2,463 ft.

Grady County

Tom Palmer 1-A Ramsey ..... SE SE NE 36-5-8w
Drilling 2,750 ft.

W. H. Atkinson 1 Gilks ..... NE NE SE 22-5-7w
T.D. 4,005 ft., may drill deeper

Greer County

Mutual Oil 1-A Caves ..... NW cor. 36-4-21w
Drilling 800 ft.

Hughes County

Magnolia 1 McLoy ..... SW SW SE 16-5-11
Lower Cromwell 5,492-5,568 ft., drilling 6,245 ft.

Jefferson County

Danciger Oil 1 Hefner ..... SE cor. 3-4s-4w
Set whipstock 3,700 ft., T.D. 3,805 ft.

Kay County

Earl Williams 1-A Trueblood ..... NE SE SE 25-25-1w
T.D. 2,030 ft., underreaming 8-in.

Mariand Oil 1 Kreger ..... SE SE NE 4-25-2w
Drilling 2,300 ft.

Continental 1 Cronan ..... NW NE SW 23-28-3
Drilling 456 ft.

Kiowa County

Artie Baker 1 Coakley ..... NW NE SE 30-7-17w
Show oil, 1,226-28 ft., 7-in. 1,226 ft., T.D. 1,230 ft.

Lincoln County

Mid-Continent Pet. 1 School Land NW NE NW 36-12-3
Drilling 4,250 ft.

Portable Drlg. et al 1 Adams ..... SW NW NW 3-14-4
Drilling 2,660 ft.

Logan County

I.T.I.O. 1 Cronkite ..... NE NE NW 22-15-4w
Mississippi lime 6,300 ft., Hunton 6,585 ft., Sylvan 6,780 ft., Viola 6,850 ft., dense 6,905 ft., dolomite 6,960 ft., Wilcox 7,035-60 ft., second Wilcox 7,127 ft., drilling 7,134 ft.

Muskogee County

Storm Feltz 1 Moore ..... NW SE SE 4-14-17

(Continued on Page 68)

Another Clinton Sand Test Is Staked in Northeast Ohio

By STAFF CORRESPONDENT

NEWARK, Ohio, Jan. 13.—Magnolia Petroleum Co. has staked another location to test the Clinton in northeastern Ohio. The new test is located in Smith Township, Mahoning County, on the D. M. Shrum tract, in the SW SW Section 4, 750 ft. north of south section line and 450 ft. east of west section line.

In Licking County, Jersey Township, McCloy, Inc., is shut down at 4,330 ft. on the sub-Trenton test.

The Clayton pool in Perry yielded a 220-bbl. and a 130-bbl. oil well, the 220-bbl. producer is the best completion in the pool to date. Coshocton County has an 80-bbl. oil well. A 2,300,000-cu. ft. gasser was completed in the village of Danville, Knox County.

In Columbiana County, Ohio, the Natural Gas Co. of West Virginia is completing the Oriskany test on the William Tice farm, Section 19, Wayne Township, with the tools now 10 ft. in the sand and the gas volume about 200,000 cu. ft. a day. In Belmont County this company is drilling at 7,550 ft. in the deep test on the E. A. Mobley farm, Section 19, Smith Township, or in the shale break in the Big lime and nearing the Clinton sand.

SUMMARY OF COMPLETIONS

Indiana

	No.	Bbl.	Footage
Oil wells	6	1,233	16,224
Gas wells	2	*21.755	1,687
Dry holes	2	.....	3,807
Total	10	.....	21,718
Ohio			
Oil wells	8	527	18,032
Gas wells	8	*6.8	23,173
Dry holes	5	.....	7,687
Total	21	.....	48,892
Western Kentucky			
Oil wells	4	350	4,974
Dry holes	3	.....	6,012
Total	7	.....	10,986

*Million cu. ft.

Athens County

Lodi Township: C. P. Bowman 1 George R. Burson, Sec. 13, dry, second Berea, T.D. 1,630 ft.
Rome Township: Gibson et al 3 W. H. Morrison, Sec. 36, 4 bbl., shot, first Cow Run, T.D. 437 ft.

Coshocton County

Pike Township: Dunman Oil Co. 1 Gilbert Ashcraft, Sec. 19, 80 bbl., shot, Clinton, T.D. 3,148 ft.

Fairfield County

Berne Township: City Natural 1 R. Sharp, Sec. 10, 120,000 cu. ft. gas, Clinton, T.D. 2,141 ft.

Gallia County

Addison Township: Orndoff 1 W. W. Summers, Sec. 25, 40,000 cu. ft. gas, shot, second Berea, T.D. 1,652 ft.

Knox County

Danville corporation: Ridgeway & Johnson 1 M. L. Houger, Lots 8 and 9, 1,000,000 cu. ft. gas, Clinton sand, T.D. 2,773 ft.
Union Township: H. E. Perkins et al 2 Lewis A. Mackley, SE Sec. 5, 2,000,000 cu. ft. gas, Clinton sand, T.D. 2,720 ft.
Upham Gas Co. 1 Judson Loney, 2,340,000 cu. ft. gas, T.D. 2,815 ft.

Licking County

Perry Township: McClay Brothers 3 fee (mapped Louisa M. Claggett), Sec. 4, 35 bbl., Clinton sand, T.D. 2,994 ft.
Washington Township: Davidson 1 John Matz, Lot 17, first quarter, dry, lime, T.D. 2,330 ft.

Lorain County

Grafton Township: Williams Prod. Co. 1 William Gest, Lot 66, 3 bbl., Berea, T.D. 167 ft.

Monroe County

Benton Township: Hanlon & Schoz 6 James Amos, Sec. 23, dry, Cow Run, T.D. 843 ft.
Washington Township: Craig Brothers 1 Mary Dye, Sec. 11, dry, Berea, T.D. 2,081 ft.

Perry County

Clayton Township: Palm Oil 2 Thurman Forgraves, NE Sec. 16, 60 bbl. and 100,000 cu. ft. gas before shot, Clinton sand, T.D. 3,370 ft.
Palm Oil Co. 2 Kehota Coal Co., Sec. 9, 220 bbl., shot, Clinton, T.D. 3,413 ft.
Palm Oil Co. 3 Z. T. Lyons, Sec. 16, 120 bbl., shot, Clinton, T.D. 3,348 ft.
Monroe Township: C. Z. Ruth 22 A. G. Post, Sec. 27, 5 bbl., shot, Berea, T.D. 1,175 ft.
Reading Township: John Shannon et al 1 O. C. Miller, 30,000 cu. ft. gas, Berea, plugged, T.D. 803 ft.

Summit County

Green Township: Burtner, Morgan et al 2 Frank Geig, Sec. 32, 1,070,000 cu. ft. gas, Clinton, T.D. 4,292 ft.

Tuscarawas County

Sandy Township: Natural Gas of West Va. 1 John Hathem, Sec. 4, 170,000 cu. ft. gas, shot, Clinton, T.D. 4,790 ft.

Washington County

Ludlow Township: Cline et al 2 Henry Hall, Sec. 28, 30,000 cu. ft. gas, shallow sand (no Berea sand), T.D. 2,017 ft.

INDIANA

EVANSVILLE, Ind., Jan. 13. — Indiana activity dropped back to normal during the past week as 11 wells were completed. Of these, six were oil wells, two were gassers, and two were dry holes. The six oil wells had a total initial production of 1,233 bbl., or 205½ bbl. per well. This is not only the largest number of producers, but the largest producers that have been completed in Indiana for several months. Five of the oil wells were in Gibson County and had an initial production of 1,065 bbl. The other oil well was completed in Posey County for 168 bbl.

INDIANA COMPLETIONS

Dubois County

A. J. Wise 1 Hopf.....NW SE NW 12-2s-5w
Dry, T.D. 755 ft.

Gibson County

Mabee O. & G. 2 New Harmony Bank.....
SE SW NW 27-3s-14w
Flowed 110 bbl., 40-qt. shot 2,770-85 ft., T.D. 2,789 ft.
Continental 10 Keck.....NE SE SE 27-3s-14w
Pumped 175 bbl., natural, reamed 2,094-2,115 ft. and 2,501-11 ft., T.D. 2,600 ft.
Continental 22 Bozeman.....NE SW NE 23-3s-14w
Pumped 240 bbl., perf. 2,827-30 ft., 3,000 gal. acid, T.D. 2,869 ft.
Continental 20 Bozeman.....SE SE NE 23-3s-14w
Pumped 140 bbl., natural, pay 2,485-2,511 ft., T.D. 2,540 ft.
Hall Edwards 20-A Maier .....SW SW NE 14-3s-14w
Flowed 400 bbl., 80-qt. shot 2,496-2,526 ft., T.D. 2,866 ft., P.B. 2,527 ft.

Posey County

Continental 4 Kleiderer A.....NE SE NE 33-3s-14w
Pumped 168 bbl., perf. 2,856-61 ft., 2,000 gal. acid, T.D. 2,899 ft.
Anderson et al 1 Foul.....NE NE SE 11-4s-14w
Dry, Glen Dean 2,397 ft., Ste. Genevieve 2,895 ft., T.D. 3,052 ft.
Joe Engberg et al 1 Meyers.....NE NW NW 1-4s-14w
T.D. 85 ft., will not drill.

Spencer County

Damron Bros. 5 Wright.....SW SE SW 20-7s-6w
20,755,000 cu. ft. gas, Palestine 876 ft., T.D. 888½ ft.

Sullivan County

Reed 2 Ogle.....NE NE SW 35-8n-10w
1,000,000 cu. ft. gas, pay 782-98 ft., R.P. 180 lb., packer on tubing 780 ft., T.D. 799 ft.

INDIANA DRILLING REPORT

Daviess County

Newton P. L. 1 Brittain.....NE NE SW 15-1n-5w
Trenton 3,212 ft. (driller's top), S.D. 3,220 ft.

Gibson County

Papoose 1 Cooper-D.....SW NE SE 5-2s-8w
Ste. Genevieve 2,859 ft., 10-qt. shot, pumped 33 bbl. in 9 hr., testing 2,968 ft.
Oleum Pet. Co. 1 Bank.....SE SE NW 5-2s-8w
Ste. Genevieve 1,385 ft. (driller's top), H.F.W. 1,536 ft., S.D. 1,536 ft.
Hyslop et al 1 fee.....NW NE NW 20-1s-9w
Fishing 1,123 ft.

Greene County

Commonwealth 1 L. L. Tucker....NE SE NE 16-6n-6w
T.D. 1,790 ft., P.B. 1,755 ft., will test show 1,760 ft.

Huntington County

Beauchamp 1 Mayer Grain.....SE NW SW 22-29n-8e
S.D. 1,025 ft.

Jay County

A. M. Jones 1 White.....NE NE NE 25-24n-12e
S.D. 255 ft.

Martin County

Collier & Burton 1 Swayze.....NW NE NE 10-3n-4w
S.D. 636 ft.

Monroe County

Terry Deskins 1 Thompson.....NE NW SE 18-9n-1e
Drilling 580 ft.

Pike County

F. J. Ellison 1 Caldmeyer.....SW SW NE 11-3s-7w
Drilling 300 ft.

Pulaski County

Ray McClure 1 Kocker.....NW NW SW 23-30n-3w
Rigging up machine.

Spencer County

J. C. Ellis et al 1 Spence.....SW NW SE 29-7s-6w
1,000,000 cu. ft. gas 675-98 ft., water 698-707 ft., drilling 840 ft.
C. E. Dice 1 Larch.....SW NW SW NW 12-6s-4w
Drilling 90 ft.

Steuben County

C. C. Goff 1 Robertson.....SE SE SE 25-36n-13e
S.D. 960 ft.

Sullivan County

W. J. Reynolds 1 Poe.....NE NE SW 3-8n-10w
Ste. Genevieve 855 ft., set 6-in. 1,313 ft., drilling 1,330 ft.

Vigo County

Sage & Farley 1 Campbell.....S½ NE NW 24-11n-8w
Spud.
H. N. Oakley 1 Seibold .....NW NW SW 18-3n-8w
Water 1,700-26 ft., S.D. 1,726 ft.

WESTERN KENTUCKY COMPLETIONS

Daviess County

Cane Run School district: Cane Run Petroleum Co. 13 Albert Jackson, 10 bbl., Jet sand 640-54 ft., T.D. 660 ft.
Handyville district: Master 11 E. W. Richmond, 15 bbl., 40-qt. shot, Jett sand, 1,218-26 ft.
Utica district: Hupp et al 1 J. R. Sheriff, dry, T.D. 1,525 ft.
Petroleum Co. et al 1 J. H. Mohon, dry through McClosky, T.D. 1,823 ft.

Graves County

One mile east of Farmington: H. K. Riddle et al 1 Earl Adair, moving in.

Henderson County

Mount Vernon, Ind., district: L. F. Boone et al 1 Harris Brothers, on Harris Island in Ohio River, dry, T.D. 2,664 ft.
Hebbardsville district: O. J. Connell 2 Cooksey Bennett, drilling at 800 ft.

McLean County

South Livermore district: Ellis 4 Stevens heirs, est. 300 bbl., flow natural, McClosky 1,625-27 ft.
Glenville district: Cameron 1 J. F. Kerrick, 25 bbl., natural, Cunningham sand, 1,455-61 ft., drilled deeper from Barlow sand.
Ohio 9 R. L. McManama (A/c No. 1), rigging up.

Oklahoma Fields

(Continued from Page 67)

Muskogee sand 1,808-83 ft., show oil, drilling 2,181 ft.

Noble County

Elson & Hudson 1-A Conway.....NE cor. 16-23-2w
Drilling 2,100 ft.

Okfuskee County

W. O. Carte 1 Bucco.....NE NE SE 20-10-12
Show gas 1,730 ft., drilling 1,738 ft.
Deep Rock 1 Davis.....SW SE NE 20-11-9
T.D. 4,147 ft., drilled plug, 4 bailers fluid an hr. with show oil, drilling 4,178 ft.
Shell 1 Davis.....SW cor. 18-13-9
T.D. 4,127 ft., swabbed 17 bbl. oil and 74 bbl. water, shot, swabbed 16 bbl. oil and 81 water, P.B. to test Hunton.
Henry Oil 1 Dudgeon.....NE SW SE 36-12-9
T.D. 3,297 ft., P.B. 3,113 ft., shot, flowed 180 bbl. in 6 hr. by heads, S.I.

Oklahoma County

Harper-Turner 1 Harper.....NW NW SW 17-14-2w
Drilled plug, small show oil and gas, T.D. 5,925 ft.

Pawnee County

Alma Oil 1-A Hill.....C N½ NW SW 1-21-5
T.D. 3,367 ft., flowing 100 B.O.P.D., 42.5 gravity.

Pottawatomie County

Colvin & Hicks 2 Westheimer....C W½ SE SW 27-6-2
Drilling 3,002 ft.
Grisso Royalty 1 La Reau.....NE NE SW 33-6-3
(Old well) Hunton 3,600 ft., Sylvan 3,750 ft., Viola 3,881 ft., dead stain, dense 3,973 ft., dolomite 4,068 ft., drilling 4,158 ft.

Seminole County

Weldon Hall 1-A Jackson.....C N½ NE SE 14-7-7
Senora lime 2,050 ft., Senora sand 2,100 ft., Boggy sand 2,530-2,662 ft., S.D.
Kerlyn Oil 1 Cherry.....SE NE NW 32-8-5
C.O. 4,325 ft.
Delaney & Atlantic 1 Clark.....NE NE SE 30-8-7
Mayes 3,885 ft., Woodford 3,970 ft., no Hunton, Sylvan 4,095 ft., Viola 4,169 ft., dense 4,205 ft., dolomite 4,229 ft., coring 4,266 ft.
Alma Oil 1 Borden.....NE SE NW 4-8-8
T.D. 4,326 ft., bailed dry, perf. 3,309-10 ft., est. 1,500,000 cu. ft. gas, perf. 3,143-50 ft., increased gas and 1 bbl. oily mud. Gaged 1,350,000 cu. ft. gas, flowing 5 bbl. oil an hr.

Stephens County

Gulf 1 Krieger.....C E½ NE SW 3-2-5w
Show oil in core 2,573-82 ft., drilling 3,568 ft., shale.

Woods County

Gulf Oil 1 Hess.....CNE NW 33-23-13w
Kinderhook 7,540 ft., Woodford 7,720 ft., Hunton 7,726 ft., drilling 7,805 ft. in Hunton.

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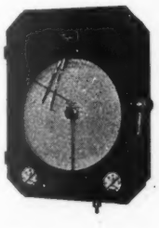

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By

R. MARNE SANFORD

Permian Basin Deep Drilling Spreading to New Counties

MIDLAND, Tex., Jan. 13.—With several deep discoveries marked up at the close of the past year, including the Wasson field deep level, the Abell field in Pecos County, and the Silurian discovery by Gulf Oil Corp. in Ward County, a general deeper drilling program is well under way for virtually the entire part of the Permian basin. New deep tests were started the past week throughout the basin from Pecos County on the south to Cochran County on the extreme north.

In Pecos County's Abell field a new deep test was staked and reports were that an old failure would be reconditioned and carried deep in search of the Silurian lime found to the northwest and in Ward County by Gulf at its 5 Wristen Brothers. Phillips Petroleum Co. became the second major company to enter the Abell field development when it staked 1 Silverman, 330 ft. from the northeast and 990 ft. from the southeast lines of Section 10, Block 3, H.&T.C. Survey. It is a direct south offset to the Taubert, McKee & Siemoneit Drilling Co. 1 Crockett, discovery well from the Mississippian lime about a month ago.

In the extreme northern corner of Pecos County and only about 10 miles south and slightly east of the deep Silurian discovery by Gulf Oil Corp., Plymouth Oil Co. is reported to have announced tentative plans to deepen its 1 Richard Levy. The test was abandoned in August 1940 at a total depth of 6,470 ft., about 600 ft. short of the point at which the Silurian saturation was found in 5 Wristen Brothers. Location of the Plymouth test is in the SW cor. Section 104, Block 8, H.&G.N. Survey, just south of the northern county line of Pecos County.

Ector Test Projected Deep

In northern Ector County Stanolind Oil & Gas Co. has projected 1-B W. F. Cowden, west outpost to the North Cowden field, to the deep Clear Fork series pay of the North Cowden deep field. Early in the week a section of oil-stained lime with porosity was tested from 4,420-60 ft., however, production was not developed. The test, located in Section 12, Block 4, Township 1n, T.&P. Survey, is bottomed at 4,481 ft. and preparing to proceed below that depth.

Crockett County Discovery

A show of oil, hailed by some as sufficient to open a new field, was reported in a wildcat test about 3 miles south of the Todd Deep field in Crockett County. It is Wahlenmaier Petroleum Co. 1 Bean, NE Section 48, Block UV, G.C.&S.F. Survey. Last reported shut in preparatory to running casing to seal off gas in the upper zone, the test is bottoming at 1,456 ft. After drilling a section of gas lime from 1,451-56 ft the test blew out spraying an estimated 8,000,000 cu. ft. of gas daily with a spray of oil. The 8⅝-in. casing is at 1,144 ft. to seal off previous gas found in the San Andres lime from 1,212-27 ft. last week.

SOUTHERN WEST TEXAS COMPLETIONS

(24-hour ratings based on last 3 hours of 6-hour gage)

Crane County

Sand Hills field: American Liberty 11 Tubb, 9,523 bbl., open casing, natural, 5,740-72 ft., top Ellenburger 5,740 ft.
Gulf 2-A Tubb, 7,169 bbl., 1,417 bbl. water, tubing, 5,000 gal. acid, 5,752-73 ft., top Ellenburger 5,752 ft.
Humble 46-X Tubb, 69.6 bbl. oil, 90 per cent of fluid output water, ½-in. choke, 500 gal. acid, 5,768-80 ft., top Ellenburger 5,762 ft.
Waddell field: Gulf 36 Waddell, 9,241,000 cu. ft. gas, open tubing, 500 gal. acid, 3,082-3,158 ft., P.B. from 3,573 ft., T.D.

Crockett County

Crockett field: F. & J. Oil 1 University, dry at 1,437 ft.

Ector County

Goldsmith field: Gulf 331 Goldsmith, 913 bbl., open casing, 4,000 gal. acid, 4,166-4,241 ft.
Foster field: Cities Service 11 Rhodes, 3,447 bbl., open tubing, 330-qt. shot, 4,080-4,194 ft.
Jordan field: Gulf 5-N State, 926 bbl., open casing, 5,000 gal. acid, 3,582-3,600 ft.
Johnson field: Schermerhorn Oil 11-B Johnson, 718 bbl., open casing, 700-qt. shot, 4,020-4,175 ft.
North Cowden field: Texas Pacific 6 Holt, 684 bbl., ¾-in. choke, 680-qt. shot, 4,425-4,510 ft.

Pecos County

White & Baker field: Cardinal Oil 3-E-32 White & Baker, 65 bbl., flowing, 13 bbl. water, 100-qt. shot, 1,841-75 ft.

Presidio County

Wildcat: H. D. Wilcox 2 Jones-Coffield, Sec. 38, Blk. 34, H.&T.C. Sur., completed for 2,000-bbl. mineral water daily, 2,375-75 ft., P.B. from 2,399 ft.

Ward County

Estes field: Gulf 141 Estes, 882 bbl., flowing, open casing, 360-qt. shot, 2,526-57 ft.
Hutchins field: Gulf 150 Hutchins, 91 bbl., open casing, 440-qt. shot, 2,634-2,784 ft., P.B. from 3,200 ft.

SUMMARY OF COMPLETIONS

Southern West Texas

	No.	Bbl.	Footage
Oil wells: Sand Hills field	3	11,009	17,325
Ector County	5	6,688	20,720
Other fields	3	1,038	7,732
Gas wells: Waddell field	1	*9.24	3,573
Dry holes: Crockett field	1	.....	1,437
Mineral water well: Wildcat	1	.....	2,399
Total	14	.....	53,186

*Million cu. ft.

Northern West Texas

Oil wells: Slaughter-Duggan	5	3,693	25,056
Seminole field	3	2,292	16,002
Wasson field	10	6,597	53,558
Sharon extension field	1	323	1,750
Dry holes: Wildcat	1	.....	6,000
Old wells deepened	1	.....	5,060
Total	21	.....	107,436

Southeast New Mexico

Oil wells: Maljamar	1	1,440	4,025

Texas Panhandle

Oil wells: Skellytown	4	506	12,232
Borger	3	686	9,099
Gray County	3	483	9,266
Total	10	.....	30,597

SOUTHERN WEST TEXAS WILDCAT REPORT

Crane County

Gulf 1-F University, SE SE Sec. 22, Blk. 31, University Sur., drilling 8,963 ft.

Crockett County

Moore & Olson 2 Noelke, 495 ft. from N and 2,548 ft. from W lines, Sec. 77, Blk. G.G., T. W. Carter Sur., T.D. 1,217 ft., running tubing for test, some oil showing from 1,185 ft. to T.D.

Culberson County

Cecil Cothrun 1 Casey-Rounsoville, Sec. 7, Blk. 104, P.S.L. Sur., drilling 1,237 ft.

Ector County

Stanolind 1-B W. F. Cowden, SE W½ Sec. 12, Blk. 44, Twp. 1n, T.&P. Sur., deep Holt lime test, show oil 4,420-60 ft., tested salt water, prepare to drill deeper.
Cities Service 1 F. V. Addis, SW SE Sec. 34, Blk. 43, Twp. 2s, T.&P. Sur., building derrick.
Forest Development Corp. 1-B W. P. Edwards, 1,787 ft. from N and 2,174 ft. from W lines, Sec. 30, Blk. 43, Twp. 3s, T.&P. Sur., drilling 3,750 ft.

Loving County

H. C. McAuley 1 E. Hall, SE Sec. 60, Blk. 7, W.&N.W. Sur., T.D. 1,880 ft., straightening hole.
Sloan & Zook 1 T.&P. Trust, SW SE Sec. 37, Blk. 56, Twp. 1s, T.&P. Sur., 3⅝ mi. NE of Tunstill gas well, drilling 2,225 ft.

Menard County

Harry Baldwin 1 J. A. Leggett, 760 ft. from W and 900 ft. from S lines, Sec. 1, B.S.&F. Sur., S.D. 575 ft. (corrected depth).

Pecos County

Culbertson & Irwin 1 R. G. Heiner, NE NE Sec. 589, G.C.&S.F. Sur., Ordovician wildcat, show oil in upper Ellenburger lime, drilling 5,265 ft.

Schleicher County

Harold B. Opp 1 Jackson, Sec. 41, Blk. L.L., T.C. Sur., drilling 5,468 ft.

Reeves County

C. A. Kitsos 1 A. B. Burchard, SW Sec. 7, Blk. 58, P.S.L. Sur., Delaware test, spudded and S.D., drilling water well.
Roy Johnson 1 Perkins, Sec. 18, Blk. 7-C, P.S.L. Sur., T.D. 1,805 ft., last report.

Sutton County

S. B. Roberts 1 George Allison, NW NE Sec. 44, Blk. K., G.H.&S.A. Sur.
Domain 1 G. S. Allison, SW NE Sec. 91, Blk. 9, T.W. N.G. Sur., Ellenburger lime test, S.D. 1,098 ft., last report.
S. B. Roberts 1 Allison, NW NE Sec. 44, G.H.&S.A. Sur., preparing ream 310 ft., last report.

Terrell County

Texas Consolidated Oil 1 Holmes, NE NE Sec. 14, Blk. 2-A, G.H.&S.A. Sur., 3,600-ft. test, location.
H. H. Sides 1 Rose, Sec. 15, Blk. 148, T.&St.L. Sur., rigging up spudder.
C. M. Thomasson 3 Bates-Graham, 600 ft. from N and 2,490 ft. from W lines, Sec. 30, Blk. 1, I.&G.N. Sur., drilling 405 ft.

Ward County

Fitzpatrick & Slack 1 Wilson, Sec. 145, Blk. 34, H.&T.C. Sur., 1½ mi. SE of discovery well, tools lost in hole at about 4,700 ft., T.D. 4,925 ft., fishing.
Gulf 6 Wristen 1,997 ft. from SE and 1,989 ft. from NE lines, Sec. 18, Blk. 5, H.&T.C. Sur., deep Silurian test, digging pits.
Roeser & Pendleton, Inc., and Merry Brothers & Perini 1 Bird Hayes, 467 ft. from SE and SW lines, Sec. 164, Blk. 34, H.&T.C. Sur., ¼ mi. N of discovery gas well contract depth 5,200 ft., to Delaware sand, spudded to 50 ft.

NORTHERN WEST TEXAS

Wildcats in both Cochran and Andrews counties were drilling ahead as exploratory tests below the regularly tested horizons of the area at the close of the past week. The Cochran County test is Livermore 1 Wright, a small producer on the extreme north end of the Dean area of the Duggan sector in Cochran County, completed in March 1938. Originally completed for only 21 bbl. of oil daily with less than 1,000,000 cu. ft. of gas from a depth of 4,987 ft., the well is deepening to the 6,000-ft. level in search of the Clear Fork lime found productive in the North Cowden Deep field of Ector County. It is located in the SE cor. of Labor 26, League 96, Mills County School lands, about 9 miles northwest of the main production in the Duggan area. With an elevation of 3,774 ft., the test had topped the anhydrite at 2,300 ft., the salt at 2,420 ft., the Yates sand at 2,880 ft., the brown lime at 3,720 ft., and the gray lime at 4,040 ft.

The Andrews County deep test is Fuhrman Petroleum 1 Lockhart and Brown, Section 24, Block 42-A, P.S.L. Survey, 3 miles west of the south end of production in the Fuhrman field of southern Andrews County. The test was a failure in the regular Permian lime pay of the area and is being deepened in search of production in either the Holt lime pay of the Clear Fork series or the Tubb pay found in western Crane County and below the Holt pay. It is bottomed at a total depth of 4,700 ft. in lime and following repairs to the rig will start toward new contract depth of 6,500 ft. The Holt lime is productive only about 18 miles southeast in the North Cowden field, however, the Tubb County pay is some 65 to 70 miles to the south. Somewhat strengthening the possibility of encountering the Tubb pay, however, is the fact the deep level at Wasson in Gaines County to the north has been identified as corresponding with the Tubb pay in Crane County. This deep Wasson level is located about 80 miles to the north.

NORTHERN WEST TEXAS COMPLETIONS

(24-hour ratings based on last 3 hours of 6-hour gage)

Cochran County

Duggan field: Devonian Oil 1 Boyd, 678 bbl., 1 per cent water, 12,500 gal. acid, 4,998-5,050 ft.

Gaines County

Seminole field: Amerada 1 Hahn, 672 bbl., ½-in. choke, 2,000 gal. acid, 5,120-5,335 ft.
Amerada 2-A Sawyer, 805 bbl., ½-in. choke, 2,000 gal. acid, 5,262-5,355 ft.
Atlantic 6-C Riley, 815 bbl., ½-in. choke, 4,000 gal. acid, 5,140-5,312 ft.
Wasson field: Amon G. Carter 5-D Wasson, 230 bbl. in 7 hr., flowing, ¾-in. choke, 18,500 gal. acid, new pay from 6,881-6,210 ft., had show oil 4,700-5,050 ft., 5,700-5,842 ft., 6,210-6,894 ft., made est. 120 bbl. daily, natural, from 5,700-5,842 ft.
Continental 1-50 Wasson, old well drilled deeper, old

total depth 4,985 ft., deepened to 5,060 ft., new initial 656 bbl., ¾-in. choke, 6,000 gal. acid.
Oil Development 1-39 fee, 370 bbl., ¾-in. choke, 8,000 gal. acid, 4,890-5,035 ft., P.B. from 5,080 ft., T.D.

Hockley County

Slaughter field: Awoeb Oil 2 Barry, 657 bbl., 2.4 per cent b.s. and w., open casing, 9,000 gal. acid, 4,915-5,013 ft.
Awoeb Oil 2-A Mid Seale, 772 bbl., open casing, 9,000 gal. acid, 4,960-5,010 ft.
Bass & Dillard 4 Forehan, 1,027 bbl., open tubing, 8,000 gal. acid, 4,885-4,998 ft.
Magnolia 2-D Mallett, 559 bbl., 1-in. choke, 10,500 gal. acid, 4,910-85 ft.

Mitchell County

Sharon Extension field: Art Wagner 1 Fuller, 323 bbl., pumping, 450-qt. shot, 1,630-1,750 ft.

Terry County

Wildcat: Gulf 4 Mallett, Sec. 4, Blk. X, P.S.L. Sur., dry at 6,000 ft.

Yoakum County

Wasson field: Aloco Oil 11-B Willard, 842 bbl., open tubing, 10,000 gal. acid, 5,030-5,220 ft.
Basin States 5 Fisher-Walker, 1,112 bbl., open tubing, 10,000 gal. acid, 4,888-5,214 ft.
Humble 12 Bennett, 410 bbl., ⅞-in. choke, 15,000 gal. acid, 5,000-5,277 ft.
Humble 10 Randall, 473 bbl., ¾-in. choke, 10,000 gal. acid, 4,990-5,096 ft.
Magnolia 23 Mahoney, 379 bbl., ⅝-in. choke, 6,000 gal. acid, 5,030-5,183 ft.
Oil Development Co. 8-763 fee, 422 bbl., ⅞-in. choke, 10,000 gal. acid, 5,025-5,270 ft.
Oil Development Co. 9-763 fee, 941 bbl., 1-in. choke, 10,000 gal. acid, 5,020-5,277 ft.
Shell 2 Corder, 928 bbl., open tubing, 10,000 gal. acid, 4,910-5,060 ft.

NORTHERN WEST TEXAS WILDCAT REPORT

Andrews County

Phillips 1-222 Embar, SE SE Sec. 6, Blk. 44, Twp. 1n, T.&P. Sur., preparing to drill.
Phillips 1-223 Embar, NE SW Sec. 7, Blk. 44, Twp. 2n, T.&P. Sur., preparing to drill.
Phillips 1 University-Drews, NW NE Sec. 32, Blk. 10, University Lands Sur., drilling 4,841 ft.
Phillips 2 Embar, NE SE Sec. 5, Blk. 44, Twp. 2n, T.&P. Sur., ¾ mile N of Embar, drilling 5,222 ft.
Furham Pet. 1 Lockhart-Brown, Sec. 24, Blk. 42-A, P.S.L. Sur., top solid lime 4,155 ft., T.D. 4,700 ft., new contract depth 6,500 ft., prep. to start up.

Cochran County

Rhodes and Atlantic 1 Dean, C NE Tract 4, Lge. 89, Lipscomb Co. School Lands, T.D. 5,150 ft., P.B. 5,112 ft., treated with 1,000 gal. acid, shot 210 qt., still testing.

Gaines County

Amon G. Carter 4-D Wasson, NW SE Sec. 50, Blk. AX, P.S.L. Sur., logged new pay about 6,610 ft., tight well, believed drilling about 9,370 ft., application filed to drill to 10,000 ft.
W. E. Smith 1 fee, in lots 11 and 12, Blk. 38, in Seminole townsite, 1¼ mile E of Seminole field, bldg. derrick.

King County

J. B. Cunningham 1 F. W. Thormann, NE NE W. C. Browder Survey, drilling 1,600 ft., 3,000-ft. test.

Mitchell County

Peck & Croft 1 Jack Smith, 2,173 ft. from N and W lines Sec. 19, Blk. 26, T.&P. Sur., location.

Yoakum County

George Livermore 1 Ownby, NE NE NE Sec. 502, Blk. D, Gibson Sur., top Yates frosted quartz grains 3,390 ft., drilling 3,895 ft.

TEXAS PANHANDLE

AMARILLO, Tex., Jan. 13.—During the past week there were 10 new completions reported for the Panhandle district, all oil wells. Continuing at a high rate, new locations counted 16 the past week, only two under the previous week's total of 18. One of the new locations for the week came near being a townsite test for the town of Pampa in Gray County. It is Deep Rock Oil 1 Vicars heirs, 2,560 ft. from the north and 2,675 ft. from the west lines of Section 114, Block 3, I.&G.N. Survey.

TEXAS PANHANDLE COMPLETIONS

(24-hour pumping gages)

Carson County

Skellytown field: J. M. Huber Corp. 13 Burnett, 67 bbl., 3,065-3,100 ft.
R. A. Burnett 7 S. B. Burnett, 28 bbl., 3,075-83 ft.
Skelly 111 Schafer, 335 bbl., 3,040-3,100 ft.
Magnolia 95 fee 244, 66 bbl., 2,895-2,949 ft.

Gray County

Pampa field: Cities Service 5 P. A. Worley, 30 bbl., 3,087-3,118 ft.
Cady, Conner & Crenshaw 3 Holmes, 232 bbl., 3,038-3,255 ft.
Lefors field: Magnolia 40 fee 227, 221 bbl., 2,825-93 ft.

Hutchinson County

Borger field: Shell 6-B Harvey Sisters, 325 bbl., 3,010-70 ft.
Shell 7-B Harvey Sisters, 300 bbl., 2,970-3,038 ft.
Phillips 12 Jordan, 243 bbl., 2,915-91 ft.

SOUTHEAST NEW MEXICO

HOBBS, N. M., Jan. 13.—Wildcatting activity in the southeastern New Mexico district of the Permian basin held considerable attention as the week closed, however, field activity was at a very low ebb. A new discovery was in prospect for central Eddy County,

(Continued on Page 74)

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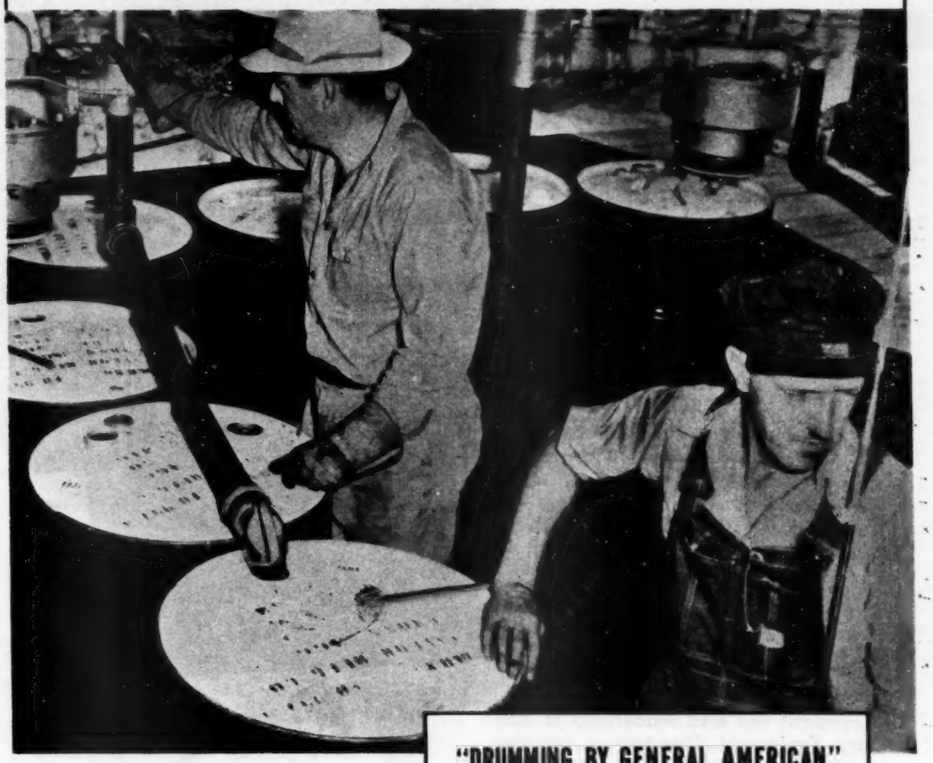

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By F. L. SINGLETON

Carrizo Springs Discovery Well Flows Oil and Gas

CORPUS CHRISTI, Tex., Jan. 13.—Producers Corp. 1 S. E. McKnight, a wildcat located in the Carrizo Springs area, Dimmit County, showed for a probable pool opener when tested during the week. With the hole bottomed in the Navarro sand at 2,298 ft. and 7-in. casing cemented at 2,292 ft., the plug was drilled, and 2-in. tubing was set at 2,288 ft. The swab was run three times and the well started cleaning out, flowing drilling mud and an unestimated amount of free oil. After flowing for 15 minutes the well began to blow dry gas and was shut in for 2 hours. When opened up again it would not flow and at the close of the week the hole was being swabbed. Casing was cemented the previous week following a drill-stem test which recovered 160 ft. of 30-gravity oil. The successful completion of this well would open the first production for the county and open considerable territory for development. Location is in the G.W.T.&P. Survey 643.

In the Corpus Christi area, and located in St. Charles Bay, offshore from Aransas County, Humble 1-27 State was attracting attention as it drills in sand below 8,058 ft. after logging showings of oil and gas. Sand and shale with an oil show was cored at 7,863-69 ft., sand and shale with a gas odor at 7,915-18 ft., gas sand at 7,955-58 ft., and sandy shale showing gas at 8,025-28 ft. The well is located about 10 miles south of Rockport and is believed to be located on part of the Lamar structure, which was discovered several years ago by the Barnsdall Oil Co. This is the second marine operation in the lower Gulf Coast district to attract attention and, with practically all bays and other submerged waters in this area under lease, this type of development is being watched with wide interest. The other wildcat to make its bid for production is Gulfboard 1-239 State on the Mud Island prospect in Aransas Bay, where a series of production tests are being made. The well was tested at 9,200-12 ft., and at 9,141-56 ft., but the results were unsatisfactory.

SUMMARY OF COMPLETIONS

Lower Gulf Coast

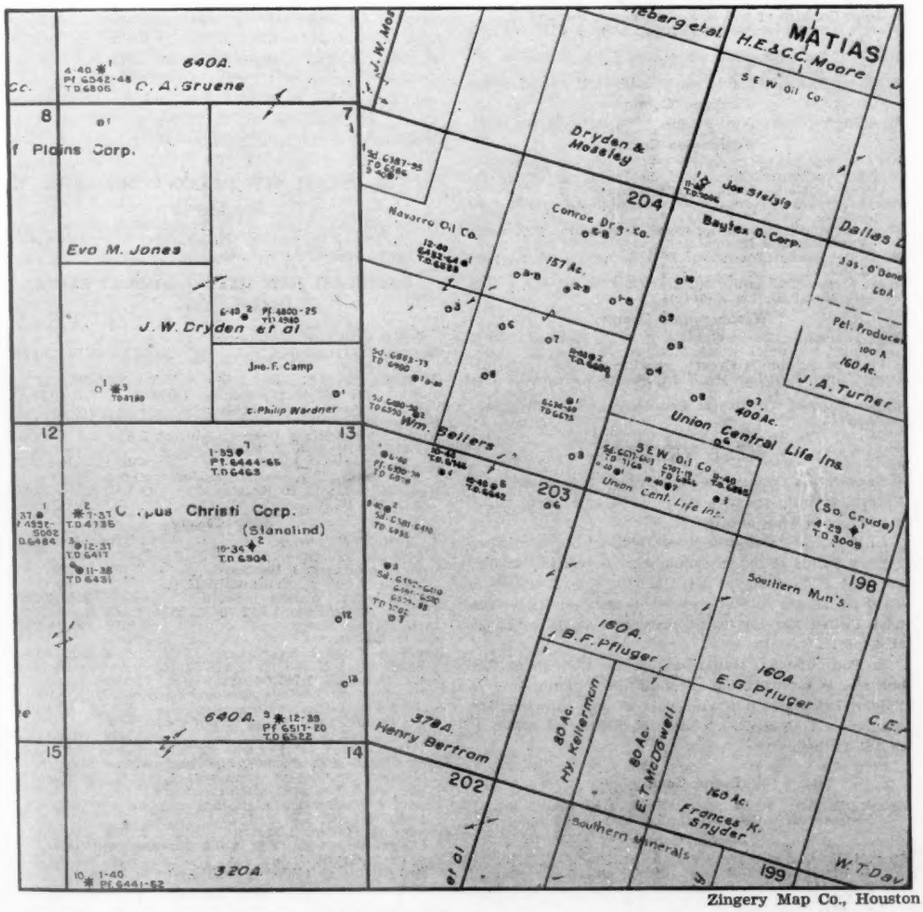
	No.	Bbl.	Footage
Oil wells: Fields	10	1,535	59,048
Dry holes: Fields	2	.....	11,857
Wildcats	2	.....	10,603
Total	14	.....	81,508

Laredo District

Oil wells: Fields	6	259	17,163
Gas wells	1	.....	2,897
Dry holes: Fields	3	.....	6,384
Wildcats	2	.....	4,410
Total	12	.....	30,854

San Antonio District

Oil wells	1	6	829
Dry holes: Wildcats	2	.....	3,643
Total	3	.....	4,472



Zingery Map Co., Houston

Plat of the Stratton field, showing trend of recent development on east flank where a large scale drilling program is under way following new sand discoveries

Calhoun County Discovery

McSpadden Co. 1 Clark has opened a new field in Calhoun County although the well may be killed and recompleted due to high gas ratio. Completed through perforated casing at 5,890-92 ft., the well is reported to have made approximately 65 bbl. of distillate per day on a ⅜-in. choke. An electrical survey is reported to have shown another sand at 5,900 ft., and this section may be tested before the well is officially completed.

In San Patricio County Arkansas Fuel Oil Co. 1 Kellerman, a wildcat located in the J. P. Borden Survey, 3 miles west of Tynan, cored sand with a gas odor at 4,194-4,202 ft., and on a 20-minute drill-stem test at 4,195-4,202 ft. tested 8 lb. working pressure and 2,250 ft. of salt water. The sand section is believed to be the Heterostegina formation, and the well is drilling ahead.

Agua Dulce Extension

In Nueces County, and located about 1 mile southeast of flank production at the Agua Dulce field, S. E. W. Oil Co. 2 Pfluger flowed 110 bbl. of distillate per day through ¼-in. choke while testing through perforated casing at 6,997-7,012 ft. The area was also extended a slight distance with the completion of Burwyn Oil Co. 1 Pure, completed in sand at 6,452-67 ft. for an initial production of 131 bbl. per day through a ⅛-in. choke. Bollwer & Rutledge 1 Ingram cored sand with an oil show at 6,520-38 ft., and 5½-in. casing was cemented at 7,003 ft.

F. A. Gillespie 1 Dabney, which opened a new gas-distillate area east of the Stratton field, Nueces County, continues to show an increase in production. On a recent 24-hour gage flowing through a ¼-in. choke the well made 116 bbl. of distillate. Tubing pressure was 2,225 lb. This well was drilled to a total depth of 7,503 ft., and was completed through perforated casing at 7,216-21 ft.

Riverside Field Extended

Gas-distillate production in the Riverside field, Nueces County, was extended to the northwest as Stanolind 2 J. A. Thompson flowed 10 gal. of distillate and 10 gal. of b.s. and water while testing through perforated casing at 5,165-68 ft.

In the La Gloria field, Jim Wells County, and about 5,900 ft. east of Magnolia 1 Sam Maun, La Gloria Operators Committee 1 Alby is bottomed at 6,764 ft., and 7-in. casing cemented at 6,536 ft. This is one of several wells which will be drilled in the field in conjunction with a large recycling project which is now under construction.

Location for two more Frio-Vicksburg wildcat tests were announced for the county. Lee Johnson et al staked location for 1 Singer in the Los Presenos de Abajo grant, a 5,750-ft. test located on a farmout lease from Transwestern Oil Co., while R. S. Waldron et al are moving in material for 1 L. W. Roth in the George Reynolds Survey 114, a 5,200-ft. test on an Arkansas Fuel Oil Co. farmout.

In McMullen County and about 1½ miles southwest of the Calliham field Harry Ezzell was preparing to test 44 fee. The well is reported to have topped the Pettus sand at 1,515 ft., and the section was cored to a total depth of 1,548 ft. Seven-inch casing was cemented at 1,250 ft. to test the Loma Novia sand topped at 1,221 ft.

The North Rincon field, Starr County, assumed greater importance as preparations were made to test Sun 1 G. H. Coates, 3,500 ft. west of the company's 1 Saenz and northeast of the discovery well, 1 Lehr. The hole is bottomed at 5,212 ft., and 5½-in. casing was cemented to test at approximately 4,300 ft., where a

(Continued on Page 85)

Test on Deer Park Anticline Is Dry in Oriskany

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Jan. 13.—An eastern wildcat in Randolph County, West Virginia, proved a disappointment. On the west flank of Deer Park anticline in Valley Bend district, the Cumberland and Allegheny Gas Co. drilled a test on the Elva Simmons farm which topped the Oriskany sand at 1,600 ft. and water was present. It was bottomed at 1,660 ft.

The test is located 6.3 miles south of Lat. 38° 50′ and 4 miles west of Long. 79° 50′. It is about 4½ miles south and 30 west of Beverly, the former county seat, and starts at an elevation of 2,030 ft.

SUMMARY OF COMPLETIONS

Southwest Pennsylvania

	No.	Bbl.	Footage
Gas wells	11	*1.2	24,525

West Virginia

Gas wells: Oriskany field	3	*6.4	8,878
Others	3	*2.3	8,343
Dry holes	2		6,665
Total	8		23,886

*Million cu. ft.

During the past week 19 operations were completed in the lower eastern fields, of which 3 were dry and 16 gas wells

SOUTHWEST PENNSYLVANIA

On Chestnut Ridge in South Union Township, Fayette County, Peoples Natural Gas Co. is drilling at 6,722 ft. in No. 3 Piedmont Coal Co. and has not yet reached the Onondaga. The shale now has lime shells. In this company's No. 4, same lease, the depth is 758 ft. and again slowed down with a fishing job. The New Penn Development Co., William E. Snee, et al are drilling at 4,679 ft. in 3 Summit Hotel. In North Union Township, Wasson & Co. et al are still fishing the bailer lost at 6,762 ft. in No. 2 J. H. Sorg.

In Beaver County L. D. McMichael et al are drilling at 1,250 ft. in the wildcat on Big Knob, Elmer Pflug farm, New Sewickley Township. A 10-in. hole is being carried which is expected to be reduced to 8 in. within the week.

Allegheny County

Lowries Run: Charles B. Wachter 1 Joseph Pierce, small gas well, Hundred-foot sand.

Armstrong County

Cowanshannock Township: T. W. Phillips 3 Harry Boyer. 44,000 cu. ft. gas, Bradford sand, T.D. 3,507 ft.

Clarion County

Porter Township: Gourley Gas Co. 3 Andrew Gourley, 126,000 cu. ft. gas, Murraysville and Boulder sands, T.D. 2,500 ft.

Red Bank Township: T. W. Phillips 2 M. D. Dinges, 20,000 cu. ft. gas, Murraysville sand, T.D. 1,361 ft.

Fayette County

Nicholson Township: Wahler-Powers 1 Geneva Supply Co., 631,000 cu. ft. gas, Big Injun sand 1,200 ft., gas 1,268-1,323 ft., T.D. 1,327 ft.

Greene County

Aleppo Township: Guy B. Patterson 1 Samuel Fuller, 138,000 cu. ft. gas, Gordon sand, T.D. 2,812 ft.

Perry Township: Gartland Oil Co. 1 Mary McClure, drilled deeper. 42,000 cu. ft. gas, Bayard sand 2,727-2,780 ft., gas 2,768-72 ft., T.D. 2,828 ft.

Whiteley Township: Lewis Petit et al 1 Shields, 182,000 cu. ft. gas., Fifth sand 3,188-3,222 ft., gas 3,216 ft., Bayard sand 3,312-26 ft., gas 3,813 ft.

Indiana County

Armstrong Township: T. W. Phillips Gas & Oil Co. 1 W. E. Sell, 50,000 cu. ft. gas, Murraysville and Snee sands, T.D. 3,500 ft.

Washington County

Somerset Township: Carnegie 2 J. D. Amos, 44,000 cu. ft. gas, Maxton sand 1,488-1,538 ft., gas 1,501-04 ft., Fifth sand 2,660-84 ft., Bayard sand 2,815-19 ft., T.D. 2,877 ft.

DRILLING

Allegheny County

Lowries Run: Charles B. Wachter 1 Zahn, 1,200 ft. Baumgartel et al 3 McPherson, 700 ft.

Armstrong County

Boggs Township: John Wray et al 1 Ralph Williamson, 20 ft.
J. K. Sharp et al 1 James Sefton, S.D. 2,750 ft.

Burrell Township: Equitable 1 James Fiscus, moving in.

Cowanshannock Township: William McCollins 1 A. L. McCullough, 140 ft.
Shelocta 1 Park Rearick, 1,285 ft.

Kittanning Township: Local Co. 1 B. H. Schreckengast, 2,910 ft.

Plum Creek Township: Shelocta 2 Harry Kough, 2,365 ft.
J. H. Wright 1 fee, rigging up.
Peoples 2 Mrs. John Boyer, 1,802 ft.
Peoples 3 Mrs. John Boyer, 3,152 ft.

South Buffalo Township: Pleasant Valley Gas Co. 1 C. J. Stepp, 645 ft.

Wayne Township: Galbreath et al 1 William Alcorn, 2,200 ft.

Clarion County

Porter Township: Squirrel Hill Gas Co. 2 Charles Fagley, 2,395 ft.

Red Bank Township: T. W. Phillips 1 M. Wolfgang, 870 ft.

Fayette County

Menallen Township: Wahler Powers 2 W. L. Rockwell, location.

Nicholson Township: Duquesne 1 Louise Collins, 802 ft.

Greene County

Center Township: Devine et al 1 Hugh Smith, 1,965 ft., fishing.

Jackson Township: Equitable 1 William Kerr, 1,112 ft.
Cleveland-Cameron O. & G. Co. 1 Cleveland Morris, 325 ft.
H. E. Milliken 1 E. Chaney, 230 ft.

Monongahela Township: H. B. Scott et al 1 Andrew Kovak, 445 ft.
H. B. Scott et al 1 Silas Provins, 620 ft., S.D.
Judson Bell et al 2 E. R. Gabler, spudding.
Greensboro 1 Charles Hopton, 1,265 ft.
Greensboro 1 Longenecker heirs, rig standing.
Brummage et al 1 Robert Whooley, moving in.
John Conklin et al 1 S. L. Mastrezar, moving in.

Morris Township: Romney Rutan et al 1 Clutter, 1,850 ft.

Richhill Township: Manufacturers L. & H. Co. 1 William Hughes, 1,210 ft.

Whiteley Township: Johnson & Eddy 1 Haze, 2,925 ft.

Indiana County

Washington Township: Peoples 1 R. Bates, 1,645 ft.

Washington County

Amwell Township: Carnegie 1 D. C. Blake, 2,045 ft.

Morris Township: Carnegie 1 Nelan heirs, rigging up.
Carnegie Nelan heirs, building rig.

North Strabane Township: Carnegie 1 Clell Gilkerson, spudding.

South Franklin Township: Foley & Williams 2 Clarence VanKirk, 700 ft.

West Bethlehem Township: J. D. Amos 1 Frank Myers, 2,565 ft.

West Finley Township: Natural Gas Co. W. Va. 1 Robert Marshall, rig standing.

Westmoreland County

Bell Township: Dome Gas Co. 2 J. F. Wolford, 300 ft.
Peoples 1 Pearl Elwood, 2,250 ft.
Peoples 2 John McCreary, rigging up.

Derry Township: Latrobe Steel Spring 1 Keystone Coal Co., 3,705 ft.

Upper Burrell Township: Peoples 1 J. P. Fitzgerald, 130 ft.

WEST VIRGINIA

In Harrison County the deep rotary test of the Hope Natural Gas Co. on the C. S. Gribble farm in Grant district is drilling at 9,767 ft.

In Jackson County Boggess Drilling Co. is drilling 1 Mary Smith at 700 ft. Columbian Carbon Co. is drilling 1 F. F. Starcher at 4,412 ft.; No. 1 F. L. Roliff at 3,650 ft.; all are in Ravenswood district. In Ripley district United Carbon Co. is drilling 1 B. B. Meadows at 4,468 ft.

In Poca district, Kanawha County, Columbian Carbon Co. is now drilling through the Clinton sand in 1 John Price and it is still void of any showing. The company's 1 Copenhaver heirs is drilling at 5,789 ft., or 181 ft. below the Newburg.

Boone County

Crook district: Pond Fork Oil & Gas Co. 2 W. E. Mooney, dry, through shales, T.D. 4,665 ft.

Lincoln County

Carroll district: Kanawha Gas & Utilities Co. 3 George A. Black, drilled deeper, 139,000 cu. ft. gas; started 2,420 ft.; Brown shale 2,405-3,450 ft., Brown shale 3,550-3,660 ft., black shale 3,660-83 ft., gas 3,600-25 ft., T.D. 3,695 ft.

Lewis County

Freemans Creek district: McCall Drilling Co. 1 B. J. Rinehart, former gas well, volume 134,000 cu. ft. gas, Injun sand, T.D. 1,905 ft., now starting to produce oil, less than 1 bbl. a day.

Putnam County

Teays Valley district: Teavee Oil & Gas Co. 1 Foster & Gibson, 2,000,000 cu. ft. gas; Salt sand 997-1,117 ft.; Big lime 1,422-1,537 ft., Big Injun 1,537 ft., gas 1,539-45 ft., T.D. 1,548 ft.

Upshur County

Banks district: Central Gas Co. 1 E. J. Smallridge, dry, Injun sand, T.D. 2,000 ft.

Wayne County

Union district: United Carbon Co. 1 Charles Ferguson, 116,00 cu. ft. gas; Big lime 1,347-1,569 ft., Injun 1,613-35 ft., Berea 2,190-2,215 ft., Brown shale 2,610-3,090 ft., T.D. 3,100 ft.

ORISKANY GAS FIELDS

Kanawha County

Poca district: Godfrey L. Cabot 1 Albert Beane, 2,822-000 cu. ft. gas, Big lime; gas 1,779-88 ft., T.D. 1,791 ft.
Godfrey L. Cabot 16 Putnam Co. 2,583,000 cu. ft. gas; Big lime; gas 1,950-54 ft.; T.D. 2,006 ft.

DRILLING

Poca district: United Fuel Gas Co. 4880 Allie Pritt, Corniferous lime 4,904 ft.; drilling 5,008 ft.

Union district: Godfrey L. Cabot 3 L. M. Lafollette, Corniferous lime 4,698 ft., Oriskany 4,787 ft., drilling 4,802 ft.

Jackson County

Ripley district: Godfrey L. Cabot 6 Putnam Co., 400,-000 cu. ft. gas before shot; after shot, 1,090,000 cu. ft. gas; Corniferous lime 4,901-5,001 ft.; Oriskany 5,001-76 ft.; gas 5,005-10 ft., gas 5,028-30 ft., T.D. 5,081 ft.

NEW WORK

Clay County

Union district: Reed, Wheeler, Young & O. G. Co. 24 Goshorn heirs, elev. 1,187 ft.

Gilmer County

Center district: Carnegie 1 G. W. Cain and G. A. Neely, elev. 1,127 ft.
Carnegie 2 Franklin Maxwell, elev. 877 ft.

DeKalb district: W. E. McKnight and Fred M. Whiting 2 Asa B. and J. D. Vannoy, elev. 846.6 ft.

Putnam County

Curry district: United Fuel 1 J. L. Lake, elev. 780 ft.
United Fuel 1 Luella Phelps et al, elev. 820 ft.

Permian Basin, Panhandle

(Continued from Page 71)

but as a result of the week's field work only one completion was registered.

The new prospective discovery is E. L. Fulton and associates 1 Edith Johnson, 2,310 ft. from the south and east lines of 22-19s-27e. Originally drilled to 1,849 ft. in lime, it was plugged back to 1,647 ft. and shot with 230 qt. from 1,572 to 1,645 ft. After cleaning out, tubing was run to 1,645 ft. and the well swabbed 27 bbl. of 34-gravity oil in 18 hours. The main pay was logged from 1,572 to 1,593 ft. Testing continued at the close of the week.

SOUTHEAST NEW MEXICO COMPLETIONS

Lea County

Maljamar field: Barney Cockburn 30-B Baish, C SE SW 28-17-32, flowed 120 bbl. in 2 hr., open casing, 330-qt. shot, 3,860-4,025 ft.

SOUTHEAST NEW MEXICO WILDCAT REPORT

Chaves County

L. E. Elliott 1 State ..... NW NE 16-11-31
Drilling 355 ft.

Roxana Oil 1 Maull ..... NE NW 11-12-25
S.D. 460 ft.

A. F. Pierce 1 Franks ..... SE NW NW 17-9-25
Show oil 862-67 ft., treated 1,000 gal., T.D. 938 ft., S.D.

Helmes-Martin 1 Stephens ..... C NW NE 22-15-29
Old well drilling deeper, 7-in. at 1,848 ft., show oil 3,112-30 ft., S.D. 3,165 ft.

H. Steinberger 1 Headley ..... NW SW 26-14s-29e
T.D. 3,405 ft., corrected, sulfur water 3,400-05 ft.

R. I. Wilson 1 L. B. Brown ..... C NW SW 29-11-23
S.D. 235 ft.

Eddy County

A. & M. Pet. 2 State ..... NW SE 15-21-27
Drilling 561 ft.

Mac T. Anderson 1 Brainard ..... NE NE 28-18-27
8¼-in. 1,500 ft., drilling 1,992 ft.

Bedingfield & Walker 1 Seale ..... SE SE SE 10-20-27
Show oil and gas 1,552-70 ft., T.D. 1,588 ft., water.

Jack Harris Josey ..... SW SE 19-20-23
T.D. 643 ft.

Jones & Yates 1 Everest ..... NE SE 15-18-26
Show oil 1,215-18 ft., 1,448-52 ft., show gas 1,549-50 ft., show oil 1,782-94 ft., 8¼-in. 716 ft., 7-in. 1,330 ft., show oil 1,549 ft., prepare to shoot, T.D. 1,984 ft.

S. P. Yates 1 Taylor-Ross ..... NW SW 22-19-25
8¼-in. 432 ft., drilling 935 ft.

Fulton 1 Johnson ..... NW SE 22-19-27
T.D. 1,849 ft., P.B. 1,645 ft., 230-qt. shot, 1,752-1,645 ft., filled 400 ft. with oil and water after being cleaned out, 5⅛-in. casing at 1,442 ft., swabbed 27 bbl. oil 5 hr., still testing.

Truett & Tallmadge 1 Rudahl ..... NE SE 2-20-24
10-in. 931 ft., S.D. 1,825 ft.

Dooley & Haynes 1 Martin ..... SE NW 9-18-25
5½-in. at 975 ft., T.D. 1,000 ft., recementing casing.

Trojan 1 Grant ..... SW NE 33-20-25
Set 8¼-in. at 1,300 ft., fishing tools 2,100 ft.

Otero County

Otero Oil 1 State ..... SE NW 5-22-10
Reaming 8¼-in. at 1,190 ft., T.D. 1,240 ft.

R. H. Ernest 1 Located Land Co. ..... SE SE 20-25-7
T.D. 3,843 ft.

By L. P. STOCKMAN

Inglewood Deep Zone Is Sole Potential Market Menace

LOS ANGELES, Calif., Jan. 13.—If the inability of prospectors to discover new major fields can be considered a good omen in the face of probable increased demand during the current year then California marketers will be favored with improved marketing conditions because it has been more than 18 months since a field of primary importance has been found. There are no wildcats at this moment that show any unusual promise and deep drilling in proved fields is likewise devoid of any special encouragement. The outcome of five deep tests is being watched with considerable interest by marketers because if new deep zones are discovered they may exert an important affect on marketing conditions later this year. These deep tests are in the Long Beach, Dominguez, Inglewood, Elk Hills fields and in the Buena Vista Hills section of the Midway-Sunset field.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: San Joaquin Valley	8	6,365	57,090
Coastal district	6	5,450	38,091
Los Angeles Basin	5	3,857	25,627
Dry holes: San Joaquin Valley ..	1	.....	4,812
Coastal district	1	.....	1,858
Total	21	.....	128,468

Dominguez Field

In the Dominguez field, Union Oil Co. has passed 11,900 ft. in 79 Callender but has not yet landed any casing and thus may be assumed to have failed to find any additional productive zone below the eighth Callender zone. This well is a no-dope hole and hence no data are available below the present productive Callender zone. It is located in the west central part of the Dominguez structure and because of its future importance it would not be surprising if Union carried the hole down to around 13,000 or 14,000 ft. before hanging up tools. In the Long Beach field, Union Oil Co. has passed 10,500 ft. in 19 Long Beach Community which the company is drilling because of lease requirements. The log of this well is likewise being closely guarded which indicates the probability that the company may undertake deeper drilling. This well was started as an offset to three wells heretofore completed in the Dormax zone around 10,500 ft. and may yet be finished in this zone. It is known that 19 Long Beach Community is running lower structurally than other completions and this may account for the difference in depth.

AVERAGE DAILY PRODUCTION

LEADING CALIFORNIA FIELDS

	Jan. 11	Jan. 4
Wilmington	80,250	80,034
Midway-Sunset	51,610	42,121
Long Beach	40,955	39,994
Coalinga	37,950	33,574
Kettleman North Dome	37,525	39,166
Ventura Avenue	34,780	34,443
Huntington Beach	26,343	25,216
Santa Fe Springs	24,670	25,067
Santa Maria Valley	20,191	17,532
Dominguez	19,660	19,019

SAN JOAQUIN VALLEY

Out on the east plunge of the Buena Vista Hills anticline in the Midway-Sunset field of Kern County, Honolulu Corp. is below 11,450 ft. in search of the Rio Bravo or Vedder zones. This well, No. 25-P in 10-32s-24e, is nearing the critical depth and its status should be determined within the next few weeks at the outside. The Stevens zone that has been found productive in the Canal, Ten Section, Coles Levee, Tupman and Greeley fields was barren in No. 25-P. If the Rio Bravo and Vedder zones are found highly productive in the Buena Vista Hills section of the Midway-Sunset field it will mean the creation of a crude oil reserve which would be by far the most extensive in the state. Another deep-drilling program that may bear watching is that started by Standard Oil Co. in the eastern end of the Hay section of the Elk Hills field. This work comprises two wells but it will be several weeks before the bit is deep enough to reach the objective. No deep production has been developed in the Elk Hills field up to date as deep drilling has been held back.

New Drilling Record

Union Oil Co. established a new drilling record in the Rio Bravo field of Kern County early this week by completing No. 36-34 Kern County Land in 34-28s-25e in the total elapsed drilling time of 34 days. In establishing this new record, which includes all elapsed time including time spent in cementing, Union surpassed the previous record held by Superior Oil Co. The new record is of special importance because it was accomplished with standard drilling equipment whereas Superior's time record was established with heavy drilling equipment. Also of importance is the fact that the hole was drilled in the conventional manner and not by the slim-hole method. No. 36-34 Kern County Land was finished with a 7-in. water string cemented at 11,357 ft. and 115 ft. of 5-in. liner including 88 ft. of 120 mesh perforations landed at 11,441 ft. No potential production test was made as potentials do not enter the existing uniform allotment.

SAN JOAQUIN VALLEY COMPLETIONS

Belridge North Field

Belridge Oil Co. 63-35 fee 35-27s-20e
Flowed 255 bbl., 50-9 gravity, 4 per cent cut, 38,000,000 cu. ft. gas, 96/64-in. bean. Pressures 475/900 lb. Elev. 646 ft. T.D. 8,447 ft. 9-in. water string 7,976 ft. 507 ft. 4¾-in. liner 8,447 ft. Perf. 7,980-8,447 ft. 8,346 ft. 2½-in. tubing. Completed in Wagonwheel zone of Eocene age. 59 days drilling time. Kern County.

Continental Oil Co. 10 Result 36-27s-20e
Flowed 240 bbl., 30.7-gravity, 1.9 per cent cut, 800,000 cu. ft. gas. 64/64-in. bean. Pressures 950/1,300 lb. Elev. 625 ft. T.D. 8,339 ft. 7-in. water string 7,797 ft. 584 ft. 5-in. liner 8,339 ft. Perf. 8,248-8,339 ft. 8,235 ft. 2½-in. tubing, including 2,992 ft. of 2-in. Completed in Wagonwheel zone of Eocene age. 46 days drilling time. Kern County.

Coalinga Southeast Field

Superior 6-B Cagle 6-20s-16e
Flowed 1,305 bbl., 28.4-gravity, 0.5 per cent cut, 790,000 cu. ft. gas, 28/64-in. bean. Pressures 1,230/1,350 lb. Elev. 705 ft. T.D. 8,241 ft. 8⅝-in. water string 7,652 ft. 611 ft. 6⅝-in. liner 8,241 ft. Perf. 7,650-8,241 ft. 7,980 ft. 2½-in. tubing. Kreyenhagen 6,404 ft., green sand 7,589 ft., main Gatchell oil sand 7,652. Bottomed in Gatchell oil sand. 42 days drilling time. Fresno County.

Universal 4 Binkley 24-20s-15e
Flowed 1,600 bbl., 30.6-gravity, 0.2 per cent cut, 200,000 cu. ft. gas. 24/64-in. bean. Pressures 1,150/1,200 lb. Elev. 735 ft. T.D. 7,825 ft. 7-in. water string 7,720 ft. 115 ft. 4¾-in. liner 7,825 ft. Perf. 7,732-7,825 ft. 7,700 ft. 2½-in. tubing. Kreyenhagen 6,350 ft., green sand 7,637 ft., Gatchell oil sand 7,712 ft. Bottomed in oil sand. 69 days drilling time. Fresno County.

Kettleman North Dome Field

Kenda 83-34-J 34-21s-17e
Flowed 245 bbl., 41.8-gravity, 0.1 per cent cut, 730,000 cu. ft. gas. 1-in. bean. Pressures 150/350 lb. Elev. 807 ft. T.D. 8,800 ft. 9⅝-in. water string 7,311 ft. 1,479 ft. 4¾-in. liner 8,795 ft. Perf. 8,578-8,795 ft. 7,025 ft. 3-in. tubing. Brown shale 5,490 ft., Temblor 6,863 ft. Deepened from 8,084 ft., completed in lower Temblor. Fresno County.

Lost Hills Field

Texas 2-28 Theta 2-26s-20e
Pumped 15 bbl., 12.8-gravity, 2 per cent cut. Elev. 390 ft. T.D. 1,301 ft. 5-in. water string 1,277 ft. 40 ft. 4-in. liner 1,298 ft. Perf. 1,273-98 ft., reperf. 1,288-98 ft. 1,277 ft. 2-in. tubing. Completed in Williamson zone. 14 days drilling time. Kern County.

Midway-Sunset Field

Merritt-Annex Oil Co. 9 Fried 25-12n-24e
Pumped 129 bbl., 23.2-gravity, 2 per cent cut. Elev. 670 ft., T.D. 3,258 ft. 8⅝-in. water string 2,583 ft. 163 ft. 6⅝-in. blank liner 2,999 ft. and 3,180 ft. 5½-in. blank liner 3,180 ft. Perf. 3,000-3,180 ft. 2,960 ft. 2½-in. tubing. Completed in Hallmark oil sand. 101 days drilling time. Kern County.

Rio Bravo Field

Union 36-34 Kern County Land 34-28s-25e
Flowed 660 bbl., 41.6-gravity, 1.3 per cent cut, 672,000 cu. ft. gas, 18/64-in. bean. Pressures 1,700/1,550 lb. Elev. 334 ft., T.D. 11,444 ft. 7-in. water string 11,357 ft. 115 ft. 5-in. liner 11,441 ft. Perf. 11,353-11,441 ft. 11,412 ft. 2-in. tubing. Rio Bravo zone 11,371 ft., Vedder zone 11,433 ft. Completed in Rio Bravo and Vedder zones. Bottomed in Vedder oil sand. 34 days drilling time. Kern County.

Ten Section Field

Shell 43-29-A Kern County Land 29-30s-26e
Flowed 2,161 bbl., 33.8-gravity, 0.7 per cent cut, 1,721,000 cu. ft. gas, 48/64-in. bean. Pressures 150/1,120 lb. Elev. 333 ft. T.D. 8,235 ft. 4½-in. combination string 8,235 ft. Perf. 8,085-8,235 ft. 8,072 ft. 2-in. tubing. Completed in productive Stevens oil zone by slim-hole drilling method. 24 days drilling time. Kern County.

SAN JOAQUIN VALLEY OUTPOSTS

Coles Levee Field

Standard 20-8 Kern County Land 5-31s-25e
T.D. 8,798 ft. in hard cherty shale. Fish drill collar. Kern County.

Union 58-2 Kern County Land 2-31s-25e
Drilling 9,496 ft. in sandy shale. Kern County.

Kettleman North Dome Field

Standard 1-1-U fee 1-23s-16e
Drilling in hard gray shale 10,961 ft. Kings County.

Midway-Sunset Field

No. American Consolidated 1-28 W. P. 28-32s-23e
Drilling 4,794 ft. Kern County.

Paloma Field

Western Gulf 12-12-B Kern County Land 12-32s-26e
Drilling 10,090 ft. in hard sandy shale. Kern County.

Rio Bravo Field

Union 41-33 Pacific States 33-28s-25e
Drilling 10,420 ft. in sandy shale. Kern County.

Sacramento District

Ind. Expl. Co. 1 Unit Plan 19-7n-6e
T.D. 4,812 ft. in basement. Top basement 4,806 ft. P.B. 450 ft. Abandoned. Made formation tests of gas shows at 2,400-2,600 ft. and 4,780-4,806 ft. Gas shows at 2,720 ft. not tested. Located approximately 12 miles SE of Sacramento, state capital of California. Sacramento County.

Strand Field

Associated 25-7-E Kern County Land 7-30s-26e
Drilling 11,299 ft. hard sand and shale. Kern County.

Wheeler Ridge Field

Richfield 2 Kern County Land 28-11n-20w
Coring, T.D. 11,100 ft. Kern County.

SAN JOAQUIN VALLEY WILDCATS

Panoche District

Jergins Trust 2 Cheney 29-14s-13e
T.D. 7,360 ft., P.B. 7,280 ft. Formation test 7,164-7,280 ft., open 58 minutes, flowed 2,000,000 cu. ft. gas and small amount of condensate. Bottom hole pressure 800 lb. Shut in bottom hole pressure 3,000 lb. Formation test 7,297-7,334 ft., open 1 hour, flowed 1,000,000 cu. ft. gas. Recovered 1,460 ft. salt water. Plug 7,280 ft. Fresno County.

Buena Vista Hills District

Honolulu 25-P fee 10-32s-24e
Drilling 11,470 ft. Kern County.

Buttonwillow District

Texas 47-15 Southern Pacific 15-29s-24e
Derrick. Elev. 287 ft. Kern County.

Potrero Hills District

Richfield 3 Potrero 10-4n-1w
Drilling 3,585 ft. Solano County.

Rio Bravo District

Wilshire 1 Campen 1-29s-25e
Drilling 11,352 ft. in sandy shale. Kern County.

Shafter District

Continental Oil Co. 2-C Kern County Land 35-27s-24e
Rotary drilling equipment has been rigged up and preparations are being made for immediate spud. Kern County.

Tejon District

Richfield 1 Tejon Ranch 2-10s-19e
Drilling 9,590 ft. Kern County.

Kern Line Oil Co. 1 Wheeler Ridge 19-11n-19w
T.D. 8,321 ft. 6⅝-in. casing cemented 8,220 ft. Will test promising showings between 8,220 ft. and bottom of hole. Kern County.

Union Avenue District

Hancock Oil Co 1 Roberts 6-30s-28e
T.D. 5,599 ft., in Chanac oil sand and shale. 7-in. 5,358 ft. Will perf. and test.

Tracy District

Standard 1 Blewett 25-3s-6e
T.D. 3,872 ft., gas sand. 8⅝-in. 3,840 ft. 11¾-in. 497 ft. San Joaquin County.

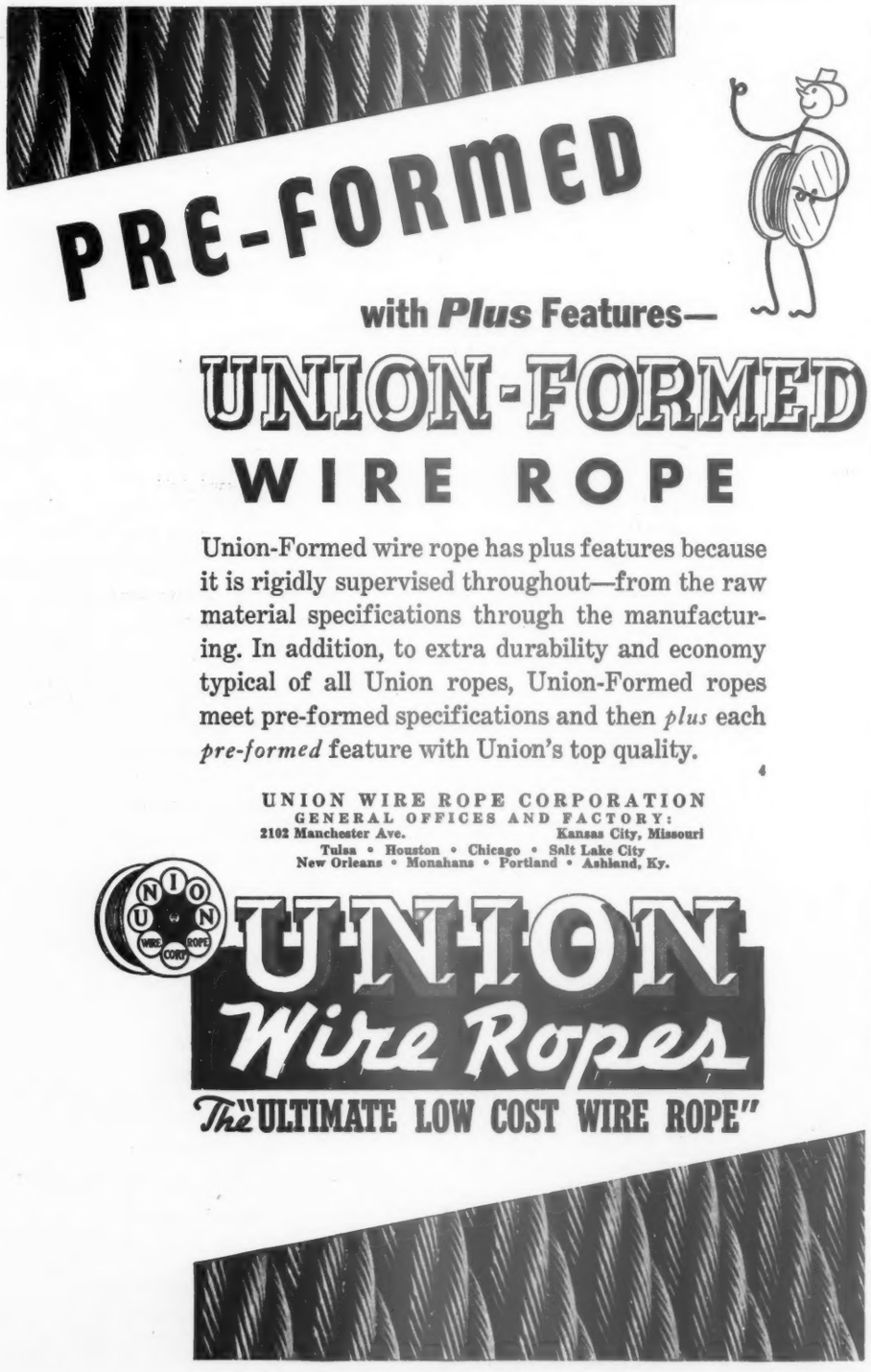
LOS ANGELES BASIN

The Inglewood field, a productive interval on the Newport-Beverly shear zone, due to deep zone development which may materialize in the not far distant

future is probably the only field in Los Angeles Basin that may cause any change in existing conditions as other areas are fairly well controlled. Inglewood presents a threat but it remains to be seen whether this threat becomes a reality. Obviously marketers would like to see deep zone exploitation delayed for another several months but this will be determined by the productivity of the Sentous zone. If Standard's 3-1 Los Angeles Investment only shows small production operators will no doubt go slow with additional deep drilling. If on the other hand large flowing production is developed, Standard Oil Co. will be obliged to proceed with aggressive deep zone exploitation and as soon as this company begins to move other operators will be forced to follow a similar procedure due to lease requirements. Only one well has been finished in the deep Sentous zone to date and consequently the importance of this horizon remains to be determined. The portion of the Los Angeles Investment lease being tested by Standard for deep zone production was quitclaimed by this company a few years ago but was regained immediately subsequent to completion of 1 Sentous. No. 3-1 Los Angeles Investment of Standard Oil Co. and 1 Sentous of R. R. Bush Oil Co. are located far out on the southwest flank of the Inglewood structure and consequently wells located higher structurally may show substantially higher production.

Montebello

The Montebello field which was in a flush condition early in 1940 is gradually but surely passing out of the production picture and within another few months will reach a much lower level. This field is still operating under a Superior Court's temporary restraining order which restricts gas production. Bottom-hole pressures have been declining for several months and the volume of gas is growing less each month. The number of wells being put on the pump has shown an increase since last October and at present most of the wells in the extreme southern end of the field have been put on the beam. Productive limits of the field have been definitely determined and it has been several months since a new well was started. During the past 90 days a number of operators have deepened wells to the La Merced zone and have maintained production by using gas from the seventh zone. Current production of crude oil has declined to approximately 16,500 bbl. per day and as the gas cap is reduced crude oil production is likewise reduced. If this field had been allowed full play free of all restrictions it would have reached its settled stage several months ago. Enforcement of the California gas conservation law has restricted gas production and in doing so has reduced gas waste to a minimum and at the same time has prolonged the flowing stage and thus increased production. An expanded gas cap in the Montebello field complicated production activities early last year and as is always the case with an expanded gas cap wells located highest on the structure and consequently those wells which could be expected to produce the largest amount of crude oil were unfavorably affected by gas expansion and by showing a high gas-oil ratio received a lower allowable production.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LOS ANGELES BASIN COMPLETIONS

Coyote East Field

Graham & Loftus 16 G. & L. 18-3s-9w
Pumped 40 bbl., 22.3-gravity, 35 per cent cut. Elev. 358 ft. T.D. 3,332 ft. 10-in. water string 2,790 ft. 871 ft. 5¾-in. liner 3,332 ft. Perf. 2,990-3,332 ft. 3,325 ft. 2½-in. tubing. Deepened from 3,188 ft. Orange County.

Dominguez Field

Union 6 Austin 29-3s-13w
Flowed 305 bbl., 32.9-gravity, 3.5 per cent cut, 253,000 cu. ft. gas. 16/64-in. bean. Pressures 500/550 lb. Elev. 38 ft. T.D. 7,548 ft. P.B. 7,135 ft. 5½-in. combination string 7,145 ft. Perf. 7,024-7,120 ft. 7,068 ft. 2½-in. tubing, with packer 6,972 ft. The plug at 7,135 ft. is inside the 5½-in. casing. Completed in Eighth Callender zone. 37 days drilling time. Los Angeles County.

Union 15 Carson 32-3s-13w
Flowed 85 bbl., 26.7-gravity, 15 per cent cut, 81,000 cu. ft. net formation gas. 1¼-in. bean. Elev. 32 ft. T.D. 8,536 ft. P.B. 8,484 ft. 5½-in. combination string 8,528 ft. Perf. 8,225-8,528 ft. 8,422 ft. 2½-in. tubing. Plug at 8,484 ft. is inside of 5½-in. casing. Completed on compressor in 55 days drilling time. Los Angeles County.

Inglewood Field

K. & I. Corp. 27 Rubel 8-2s-14w
Flowed 882 bbl., 31-gravity, 0.6 per cent cut, 2,900,000 cu. ft. gas. 1 13/16-in. bean. Pressures 175/400 lb. Elev. 297 ft. T.D. 3,270 ft. 8⅝-in. water string 2,560 ft. 743 ft. 6⅝-in. liner 3,269 ft. Perf. 2,567-3,269 ft. 2,900 ft. 2½-in. tubing. Completed in Rindge zone of Pliocene age. 23 days drilling time. Los Angeles County.

Wilmington Field

Union Pacific R. R. 166 fee 3-5s-13w
Flowed 1,545 bbl., 23.5-gravity, 0.1 per cent cut, 60,000 cu. ft. gas. 48/64-in. bean. Pressures 300/525 lb. Elev. 15 ft. T.D. 2,941 ft. 7-in. water string 2,696 ft. 245 ft. 4-in. liner 2,941 ft. 60-mesh perf. 2,598-99 ft., 2,619-76 ft., 2,697-2,941 ft. 2,595 ft. 2½-in. tubing. Completed in upper Terminal zone. 14 days drilling time. Los Angeles County.

LOS ANGELES BASIN OUTPOSTS OR DEEP TESTS

Dominguez Field

Union 79 Callender 32-3s-13w
Drilling 11,910 ft. Los Angeles County.

Inglewood Field

Standard 3-1 L.A.I. 17-2s-14w
T.D. 8,845 ft. Hard Miocene sandy shale. Formation test 8,711-8,806 ft., open 47 minutes, fair blow for 12 minutes, recovered 86 ft. thick gassy mud containing oil. Los Angeles County.

Long Beach Field

Union 19 L.B.C. 30-4s-12w
Drilling in sand and shale 10,598 ft. Los Angeles County.

Possible New Gas Field

Standard appears to have discovered a new commercial dry gas field in San Joaquin County in the north central part of the state although this will not be definitely determined until an actual production test has been conducted. The wildcat that has shown commercial gas production possibilities is 1 Blewett Community in 25-3s-6e about 7 miles southeast of the Tracy gas field. On a formation test at 3,840-72 ft. this well flowed at a daily rate of 7,500,000 cu. ft. of gas per day through a small bean. Immediately upon conclusion of the formation test, Standard Oil Co. landed a string of 8⅝-in. casing at 3,840 ft. preparatory to finishing in the conventional manner. This area is located in close proximity to main trunks of the Standpac pipe line which feeds the San Francisco Bay region. The Stanpac pipe line is owned jointly by Standard Oil Co. and Pacific Gas & Electric Co. When Milham Exploration Co. started gas exploitation several years ago in the Buttonwillow gas field of Kern County it was generally believed that the state's principal gas reserves were located in the southern San Joaquin Basin especially in Kern and Fresno counties. Subsequent drilling, however, changed the outlook and

(Continued on Page 89)

By
STAFF CORRESPONDENT

Trenton Well in Salem Field Reported Flowing Into Tanks

MATTOON, Ill., Jan. 13.—Paul Rossi's Trenton test in the Salem pool was reported flowing into tanks Saturday after the operator stated that there was over 4,000 ft. of oil in the hole. The well was around 4,600 ft. or nearly 100 ft. in the formation and the operator is drilling ahead in the hope of getting more production. No tests were made, but it is believed that the well wil' be a good one. Four offset tests are already under way with one down over 4,100 ft. and a successful well will bring the total number of offsets to nearly 70. Already operators in Illinois are talking about a return to peak production as a result of the Trenton development.

The only other Trenton production in Illinois is from a few wells in Clark County and the Dupo and Waterloo fields near the Mississippi River. The last-named pools are shallow, about 500 ft., and yields average about 1,300 bbl. per acre. The Salem field may greatly improve on this recovery but a wild drilling campaign, such as the field saw last year, may not prove profitable.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Albion	2	159	3,193
East Calvin	10	1,394	27,241
Hoodville	4	519	11,981
Louden	2	606	3,010
North New Harmony	3	615	8,284
Storms	2	402	4,549
Thompsonville	2	129	6,300
West Liberty	4	4,105	11,338
Other pools	11	1,036	21,357
Wildcats	2	280	4,762
Dry holes: Fields*	2	.....	4,563
Wildcats	17	.....	36,538
Total	61	.....	143,116
Recompletions	5	475	.....

*Centralia 1, East Calvin 1.

Other Deep Tests

Two of Illinois's important deep tests proved to be disappointments during the past week while two others showed promise of becoming important discoveries.

B. E. Martin 1 Robinson, SE SW 4-2n-1e, much publicized St. Peter test in the Sandoval field of Marion County, encountered water in the St. Peter sandstone after topping the formation at 4,977 ft. This well, an old Devonian producer, was also dry in the Trenton lime. Failure of the test probably signalized the end of future development in the Sandoval field which was discovered 35 years ago with the completion of a sand producer on the Benoist farm, after which the Benoist horizon was named. The only other production in the field was discovered in 1938 when the Southwestern Oil & Gas Co. completed a large producer in the Devonian lime.

The other important failure during the week was Schwartz 1 Schlafly, SE NE SE 3-2n-3w, a St. Peter test at the edge of the Carlyle pool in Clinton County. This well, previously drilled to 3,530 ft., and deepened to test the St. Peter, found the desired formation dry at 4,106 ft.

Paul Rossi 8 Brooks, SW NE SW 29-2n-2e, was drilling ahead in the Trenton lime at the end of the week after encountering saturation in the top of the formation at 4,505 ft. Extent of the saturation has not yet been disclosed. Mr. Rossi indicated that his well would be completed at some time during the present week.

Prospects of a new pool in Edwards County seemed good when fluid rose 750 ft. in a drill-stem test opened for 90 minutes at Tide Water Associated Oil Co. 1 Gawthorp, NE NE NE 13-1s-10e. The test was made in the McClosky at 3,265-86 ft. Although the operators planned to continue drilling in search of a second McClosky break, pipe will be set to test the show already found regardless of whether additional pay is encountered or not.

Franklin County Pool Assured

A new pool was practically assured in the coal-producing area of Illinois during the week when E. S. Adkins 1 Orient Coal Co. swabbed 142 and 167 bbl. of oil in two 24-hour tests from the Tar Springs. The well was given a 15-qt. shot at 2,120-48 ft. preparatory to putting it on pump at the end of the week.

Activity throughout the state was back to normal during the past week as 66 wells were completed. Of these, 42 were oil wells and 19 were dry holes. Total initial production of the 42 producers was 9,218 bbl., or 219 bbl. per well. Although White County remained the most active area during the week with a total of 23 completions, the high initial production of the state was maintained by the West Liberty pool of Jasper County with four completions which produced an average of 1,026 bbl. per well initially.

Drilling reports at the end of the past week carried 284 operations. Of these, 28 were locations, 36 were rigs, 10 had spudded, 62 were shut down and 148 were drilling.

ILLINOIS COMPLETIONS

Bond County

Womack pool: Arrow Drlg. 5 Spindler, NW NW SW 10-6n-2w, pumped 64 bbl. oil and 5 bbl. water, 20-qt. shot, Benoist 1,003-18 ft.

Clark County

Martinsville pool: Strickler 1 McFarland, NW NE SW 19-10n-13w, pumped 8 bbl. oil and 25 bbl. water per week, 100-qt. shot 1,300-64 ft.

Clay County

Wildcat: Maddox et al 1 D. Levitt, W½ SW NW 22-4n-8e, dry, Menard 2,275 ft., Glen Dean 2,454 ft., Cypress sand 2,698 ft., Benoist 2,838 ft., Aux Vases 2,907 ft., Ste. Genevieve 2,965 ft., T.D. 3,108 ft.

Clinton County

Centralia pool: Holmes 1 Cooksey, NE NE NE 23-1n-1w, dry, No. 6 Coal 545 ft., Glen Dean 1,082 ft., Benoist 1,453-56 ft.

Wildcat: Williams & Lyman 1 Thomas estate, SW NE NW 24-2n-1w, dry, T.D. 1,605 ft.

Schwartz 1 Schlafly, SE NE SE, 3-2n-3w, old well drilled deeper, old T.D. 3,530 ft. Joaquin 3,900 ft., Maquoketa 3,248 ft., Trenton 3,434 ft., Plattin 3,560 ft., St. Peter 4,106 ft., T.D. 4,120 ft., dry.

H. G. Gass 1 Phoenix, SW SW NW 14-1n-1w, location abandoned.

Bartelso pool: Grant 1 Kohrman, SW NE SW 5-1n-3w, location abandoned.

Edwards County

Albion pool: Noah & Morrison 1 West Barnes, SE NW NW 24-2s-10e, pumped 75 bbl., 5,000 gal. acid, McClosky 3,103-09 ft., T.D. 3,193 ft.

Superior 7 Works, NW SW NW 18-2s-11e, old well drilled deeper 3,155-3,201 ft., pumped 84 bbl., no additional pay.

Continental 1 Goodson, SE SW NE 13-2s-10e, location abandoned.

Continental 4 Stafford, NW SE NE 13-2s-10e, location abandoned.

Wildcat: Wall & Mitchell 1 Stewart, SW SW SW 12-1s-10e, dry, Menard 2,419 ft., Glen Dean 2,691 ft., Barlow 2,908 ft., Paint Creek 3,068 ft., Benoist 3,073 ft., Aux Vases 3,212 ft., Ste. Genevieve 3,250 ft., St. Louis 3,345 ft., T.D. 3,408 ft.

Effingham County

Wildcat: C. L. Erwin 1 Patterson, SW SW NE 18-8n-4e, dry, pumped 4 bbl. oil and 30 bbl. water, Benoist 1,564-74 ft.

Fayette County

Louden pool: Magnolia 35 T. C. Clow, NE NW NE 5-7n-3e, flowed 440 bbl., 30-qt. shot, Cypress 1,454-81 ft., 60-qt. shot, Paint Creek stray 1,519-45 ft.

Magnolia 37 T. C. Clow, NE SW NE 5-7n-3e, flowed 166 bbl., 10-qt. shot, Benoist 1,513-37 ft., 10-qt. shot, Cypress 1,458-65 ft.

St. James pool: Ohio 12 C. T. Williams, SE NE SW 36-6n-2e, pumped 90 bbl., 8-qt. shot, Cypress 1,604-14 ft.

Wildcat: Allied & Youngblood 1 R. Walker, W½ SE SE 9-4n-1w, dry, Glen Dean 1,099 ft., Cypress sand 1,273-82 ft., Benoist 1,397-1,421 ft., Ste. Genevieve 1,547 ft., Fredonia 1,648 ft., T.D. 1,703 ft.

W. H. Brown 1 Lockard, SE SE SE 29-8n-2e, dry, T.D. 1,760 ft.

Turner 1 Pruett, SE SW NW 7-5n-3e, dry, Glen Dean 1,473 ft., Cypress 1,643 ft., Paint Creek stray 1,715 ft., T.D. 1,935 ft.

Franklin County

Thompsonville pool: Benedum & Trees 1 McCrary, SE SE SW 27-7s-4e, pumped 79 bbl. oil and 10 bbl. water, 3,000 gal. acid, McClosky 3,175-88 ft.

Helmerich & Payne 2 Sanders, NE NW NW 35-7s-4e, pumped 50 bbl. oil and 40 bbl. water, 3,500 gal. acid, McClosky 3,102-12 ft., perf. 3,072-75 ft., T.D. 3,112 ft.

Hamilton County

Hoodville pool: Exchange 4 Stelle, SW NE SE 27-5s-6e, pumped 64 bbl. oil and 35 bbl. water, 20-qt. shot, Benoist 2,941 ft., pay 2,955-60 ft.

Exchange 5 Stelle, NE NW SE 27-5s-6e, pumped 50 bbl. oil and 6 bbl. water, 20-qt. shot, Benoist 2,944 ft., pay 2,957-62 ft.

Exchange 13 Friel B, NE SE SW 34-5s-6e, pumped 180 bbl., 10-qt. shot, Benoist 2,946 ft., pay 2,960-64 ft., T.D. 3,099 ft., P.B. 2,967 ft.

Shell 8 Porter, SW SW SE 34-5s-6e, pumped 225 bbl., 10-qt. shot, Benoist 2,532 ft., pay 2,953-60 ft.

Wildcat: H. E. Ledbetter 1 D. Hunt, SE NE SW 13-5s-5e, dry, T.D. 3,567 ft.

Jasper County

West Liberty pool: Pure 2 S. Rogers, E½ NE SW 8-5n-10e, flowed 1,123 bbl., McClosky 2,800-06 ft., T.D. 2,833 ft.

Pure 1 Craig Consol., E½ NW SW 20-5n-10e, flowed 1,336 bbl., 5,000 gal. acid, McClosky 2,791 ft., pay 2,796-2,810 ft., show 2,730-50 ft., T.D. 2,835 ft.

Pure 2 W. Kermickle B, E½ SE SE 32-6n-10e, flowed 1,368 bbl., 5,000 gal. acid, McClosky 2,794-2,802 ft., T.D. 2,825 ft.

Pure 1 J. Frohning, W½ SW SW 33-6n-10e, flowed 278 bbl., 5,000 gal. acid, McClosky 2,795-98 ft., T.D. 2,845 ft.

McDonough County

Wildcat: A. B. Hanna 1 F. Carey, NE SW SW 28-4n-3w, dry, Niagara 546-72 ft., T.D. 590 ft.

Macoupin County

Wildcat: F. Mudgett 1 Dorks, NE NE NE 30-10n-7w, dry, Mississippi lime 560 ft., T.D. 562 ft.

Monroe County

Waterloo pool: Regent 7 Gummershimer, NE SW NW 2-2s-10w, pumped 20 bbl. oil and 10 bbl. water, 1,000 gal. acid, Trenton 429 ft., T.D. 468 ft.

Montgomery County

Wildcat: Hood 1 Dambacker, SE NE SE 16-12n-5w, dry, old well drilled deeper 645-1,019 ft., Mississippi lime 825 ft.

Wabash County

Keensburg pool: Burr Lambert 2-A Buckholz, SE SW NE 9-2s-13w, pumped 26 bbl., Cypress sand 2,409-24 ft., T.D. 2,425 ft.

Griffin pool: Phillips 10 Schultz, W½ NW 7-3s-13w, pumped 131 bbl., 35-qt. shot, Cypress 2,480-2,501 ft.

W. W. Gray 12 fee, NE NE SW 14-3s-14w, pumped 250 bbl., 25-qt. shot, Cypress 2,504-25 ft.

Wildcat: J. Young 6 Stilwell, SE NW SE 1-1n-12w, flowed 250 bbl., Benoist 2,011-14 ft., T.D. 2,021 ft.

Washington County

Irvington pool: Magnolia 7 O. Rahn, SE NE NE 22-1s-1w, pumped 29 bbl., 4-qt. shot, Benoist 1,541-43 ft.

Dubois pool: Buwaldt 1 J. Bender, NW NW NW 20-3s-1w, pumped 48 bbl., Benoist 1,364-72 ft.

Wildcat: Wood River Crude 1 W. Kazbar, SE SW NW 2-3s-3w, dry, Glen Dean 983 ft., Golconda 1,050 ft., Cypress 1,180 ft., Benoist 1,350 ft., Aux Vases 1,425 ft., Ste. Genevieve 1,550 ft., T.D. 1,660 ft.

Magnolia 1 T. Gill, NE NE NW 35-3s-3w, dry, Menard 734 ft., Glen Dean 917 ft., Golconda 985 ft., Barlow 1,075 ft., Paint Creek 1,200 ft., Benoist 1,274 ft., T.D. 1,316 ft.

White County

East Calvin pool: Tide Water 3 Evans, SW NE NW 4-4s-14w, pumped 75 bbl., 15-qt. shot, Cypress 2,597-2,620 ft., 20-qt. shot, Aux Vases 2,790-2,800 ft., T.D. 2,810 ft.

Bell Brothers 2 Skile, SW NW SW 16-4s-14w, pumped 155 bbl., 40-qt. shot, Benoist 2,701-19 ft.

Pure 5 G. P. Calvin B, NE NW NW 16-4s-14w, flowed 189 bbl., 98-qt. shot, Aux Vases 2,822-60 ft.

Cherry & Kidd 4 Gray D, SW NW NE 17-4s-14w, pumped 145 bbl., 80-qt. shot, Benoist 2,693-2,710 ft., Paint Creek 2,668-78 ft.

Cherry & Kidd 4 Gray E, SW NE NW 17-4s-14w, pumped 130 bbl., 70-qt. shot, Paint Creek 2,679-2,704 ft., Benoist 2,711-19 ft.

Duncan 3 C. C. Hughes, NE NE SE 17-4s-14w, pumped 150 bbl., 40-qt. shot, Benoist 2,704-20 ft.

W. W. Gray 6 fee, NE SE NW 17-4s-14w, pumped 175 bbl., 20-qt. shot, Cypress 2,578-90 ft. (saturated), Benoist 2,697-2,710 ft.

Skelly 2 Daly, trustee, SE NE SW 17-4s-14w, pumped 57 bbl., 20-qt. shot, Benoist 2,705-24 ft.

Tipton 3 Boltinghouse, NE SE NE 17-4s-14w, pumped 240 bbl., 80-qt. shot 2,696-2,723 ft.

K. B. Yost 4 Bramlett, NW NW SE 17-4s-14w, pumped 78 bbl., Cypress 2,560-78 ft.

Evarts 1 Knight, SW NW SW 17-4s-14w, dry, Menard 2,168 ft., Glen Dean 2,405 ft., Golconda 2,495 ft., Benoist 2,748 ft., Aux Vases 2,852 ft., Ste. Genevieve 2,946 ft., St. Louis 3,103 ft., T.D. 3,107 ft.

Skelly 3 Daly, trustee, NE NE SW 17-4s-14w, location abandoned.

North New Harmony pool: Tide Water 9 Dennis, SE NW NE 33-4s-14w, pumped 225 bbl., 20-qt. shot, Benoist 2,688 ft., pay 2,713-26 ft.

Superior 4 H. C. Ford A, NW NW NW 34-4s-14w, pumped 170 bbl., 3,000 gal. acid, McClosky 2,880-86 ft., 2,903-09 ft., perf. Cypress 2,562-73 ft., 2,587-

91 ft., Benoist 2,698-2,834 ft., Aux Vases 2,814-26 ft. Superior 6 Greathouse, NE NE NE 4-5s-14w, pumped 220 bbl., 3,000 gal. acid, McClosky 2,900-20 ft., perf. Cypress 2,585-97 ft., Benoist 2,704-32 ft.

Springerton pool: A. W. Gerson 1 Belva, NW NE NW 6-4s-8e, pumped 120 bbl., Aux Vases 3,223-61 ft., T.D. 3,264 ft., P.B. 3,260 ft.

Storms pool: Skelly 1 Wilson, SE SW NE 11-6s-9e, pumped 165 bbl., 10-qt. shot, Waltersburg 2,268-80 ft.

Exchange 13 Pearce, SE NW NW 12-6s-9e, swabbed 237 bbl., 10-qt. shot, Waltersburg 2,266-69 ft.

Mill Shoals pool: Cornwall 3 W. A. Felix B, SW SE NE 19-3s-8e, pumped 250 bbl., 30-qt. shot, Aux Vases 3,217-52 ft., T.D. 3,254 ft.

Wildcat: Arrow 1 Crook, NW SE SW 28-3s-14w, dry, Biehl 1,895 ft., Menard 2,086 ft., Glen Dean 2,358 ft., Barlow 2,591 ft., Paint Creek 2,682 ft., Benoist 2,750 ft., Aux Vases 2,796 ft., Ste. Genevieve 2,822 ft., Fredonia 2,882 ft., T.D. 2,965 ft.

Rockhill 1 F. M. Hon, NE NW NW 5-4s-14w, dry, base Pennsylvanian 2,184 ft., Menard 2,286 ft., Glen Dean 2,503 ft., Golconda 2,615 ft., Barlow 2,730 ft., Benoist 2,690 ft., Aux Vases 3,011 ft., Ste. Genevieve 3,061 ft., Fredonia 3,133 ft., T.D. 3,164 ft.

R. B. Martin 1 P. Westergard, SE SW SE 19-6s-9e, dry, base Pennsylvanian 1,825 ft., Menard 2,170 ft., Glen Dean 2,435 ft., Golconda 2,509 ft., Barlow 2,665 ft., Paint Creek 2,755 ft., Benoist 2,845 ft., Aux Vases 2,921 ft., Ste. Genevieve 2,947 ft., Fredonia 2,991 ft., T.D. 3,101 ft.

Arrow 1 Hahn C, NW SE SE 32-3s-14w, pumped 30 bbl., 1,000 gal. acid and 80-qt. shot, Benoist 2,708-36 ft., T.D. 2,741 ft., P.B. 2,736 ft.

ILLINOIS DRILLING REPORT

Bond County

J. Farrelly 1 Kyle.....SW NW NW 28-4n-4w
S.D. 1,430 ft.

Cass County

J. Randolph 1 fee.....SE SW SW 3-17n-10w
Spud.

Clark County

Sherritt et al 1 Jeffers.....SE NE SE 31-11n-13w
Drilling 1,170 ft.

Shawver & Gallatin.....SE SE NE 25-10n-14w
Sand 1,340 ft., T.D. 1,415 ft., set 6-in. 926 ft., to shoot.

Clinton County

Hughes 2 Holman.....NE SW SE 10-2n-1w
Drilling 530 ft.

J. F. Ashoff 1 Lampen.....NW NW NW 16-1n-2w
Moving in.

Kreigh 1 Kampworth.....NE NW NW 8-1n-3w
S.D. 803 ft.

Illinois Drlg. 1 Stacy Cemetery SE SE SW 36-2n-1w
S.D. 85 ft.

Coles County

Allen & Sherritt 1 Taylor.....SE SW SW 33-14n-10e
Old well drilled deeper, old T.D. 900 ft., S.D. 1,053 ft.

De Kalb County

J. E. Milburn 1 Eraas.....NW NW SE 22-38n-3e
Old well drilled deeper, old T.D. 520 ft., T.D. 585 ft.

Edwards County

J. D. Barnes 1 Hodgson.....N½ NE 1-2s-10e
Glen Dean 2,560 ft., Golconda 2,698 ft., Cypress 2,870 ft. whipstock 2,330 ft.

H. H. Weinert 1 A. Wick.....NW NW NW 24-2s-10e
Rig.

Effingham County

Minerva 1 Burns.....SE NE 22-6n-5e
Location.

Fayette County

National Pet. 1 Heckathorn.....NW SW SE 22-5n-1e
Drilling 260 ft., set 10-in. 73 ft.

Angelo-Twelve Oil 1 Oates.....N½ SE NE 13-4n-1w
Glen Dean 1,170 ft., Cypress 1,330 ft., Aux Vases 1,535 ft., slight show oil, Ste. Genevieve 1,620 ft., Fredonia 1,667 ft., Salem 1,867 ft., elev. 498 ft., drilling 2,497 ft.

Ford County

Nelson et al 1 Erp.....SW NW SE 19-24n-7e
Drilling 2,963 ft.

Franklin County

E. S. Adkins 1 Orient Coal.....NE SW SW 24-6s-2e
15-qt. shot 2,120-48 ft., cleaning out.

E. S. Adkins 1-B Orient Coal.....SE NE NW 12-7s-2e
Golconda 2,262 ft., Paint Creek 2,532 ft., Benoist 2,642 ft., Aux Vases 2,680 ft., Ste. Genevieve 2,739 ft., Fredonia 2,843 ft., show oil, St. Louis 2,983 ft., T.D. 2,989 ft., P.B. 1,950 ft.

Helmerich & Payne 1 P. M. Marvel.....NW NW SW 36-7s-4e
Set 7½-in. 2,653 ft., S.D. 2,670 ft.

Gallatin County

W. E. Allund 1 E. Frye.....NE SE NW 19-8s-10e
Swabbed water and show oil 1,786 ft., set 7-in. 1,775 ft.

Cameron 2 Robinson.....SE NW NW 4-8s-8e
T.D. 1,727 ft., set 7-in. 1,700 ft.

Cameron Bros. 1 J. B. Green.....NW SE SW 4-8s-8e
Rig.

Hamilton County

Duncan 1 Zeller.....SE NE NE 34-3s-5e
Ste. Genevieve 3,219 ft., saturation 3,337-59 ft., pumped 300 bbl. in 17 hr., testing.

Jackson County

Magnolia 1 Smith heirs.....SE SE NE 9-8s-3w
Devonian 2,600 ft., drilling 3,113 ft.

G. Hass et al 1 J. B. Bechtloff.....NW NW SE 5-8s-2w
Moving in.

W. R. White 1 Dean.....NE NW NW 18-9s-3w
Drilling 1,245 ft.

Lawrence County

Perry 1 R. N. Brown.....NE SW SE 22-3n-13w
Elev. 525 ft., Glen Dean 1,940 ft., McClosky 2,451-60 ft., S.D. 2,503 ft.

Robinson 1 Sauers.....NW SE NW 20-3n-12w
Bainbridge 4,314 ft., drilling 4,461 ft.

W. Payne 1 H. Payne.....NW SW NW 20-3n-11w
Cleaning out 860 ft.

Jasper County

Jasper Oil 1 Poehler.....N½ NE NW 7-5n-10e
T.D. 2,920 ft., P.B. 2,825 ft., 20-qt. shot, perf. 2,797-2,805 ft., cleaning out.

Macoupin County

Bridges & Valbert 1 Felker.....NW NE SW 1-9n-7w
Drilling 1,025 ft.

Madison County

E. A. Gilchrist 1 E. Hasto.....NW NW SW 5-5n-5w
Rig.

Alch & Carroll 1 Rinkel.....SE NE NW 33-5n-6w
S.D. 650 ft.

F. C. Kiskadden 1 G. A. Fisher SE SW NE 27-5n-8w
S.D. 320 ft.

Harr & Seigler 1 Bellin.....NW NW SE 17-4n-5w
H.F.W. 200 ft., drilling 343 ft.

Wickwire & Camberling 1 Ellis..W½ NW SE 22-3n-6w
Set 8⅝-in. 512 ft., drilling 595 ft.

Marion County

Martin et al 1 Robinson.....SW SE SW 4-2n-1e
Set 4½-in. 4,276 ft., S.D. 5,011 ft.

Paul Rossi 8 Brooks.....SW NE SW 29-2n-2e
Silurian 3,850 ft., Maquoketa 4,298 ft., Trenton 4,505 ft., set 5½-in. 4,515 ft., S.D.

McDonough County

Vancroft & Bowman 1 W. A. Murray.....NW SE SE 8-5n-4w
S.D. 902 ft.

McLean County

Funks Grove O. & G. 1 Crawford.....NW NW NW 28-22n-1e
Drilling 1,250 ft.

Mercer County

J. H. Williams 1 Carter.....SW SE NW 17-15n-2e
Elev. 686 ft., Benoist 1,206 ft., drilling 1,238 ft.

Montgomery County

J. W. Branson 1 Woods.....SE SE NW 5-10n-5w
S.D. 608 ft.

Ben Turelli & Hempen 1 J. Ahrling.....NE SE NE 25-10n-5w
S.D. 95 ft.

J. Warner 1 R. DeFratus.....SW SW SW 18-10n-4w
Rig.

F. Brown 1 Luddeke.....SE NW NW 28-9n-4w
S.D. 252 ft.

Keith 1 Varner.....NE SE SW 3-8n-5w
Pottsville 643 ft., show oil 643-44¼ ft., S.D. 661 ft.

Ginsberg et al 1 McDenver.....SW NE SE 14-7n-2w
Underreamed 7-in. at 1,100 ft., S.D. 1,164 ft.

Pope County

L. V. Garnier 1 Peoples.....NE NE NE 30-11s-5e
McClosky 2,095-2,106 ft., T.D. 2,152 ft., acidizing.

Richland County

M. O'Meara 1 C. Leaner.....SW NW NE 24-4n-9e
S.D. 1,737 ft., set 10-in. 60 ft.

Oilwell Drlg. 1 F. Hilborn.....NW SW NE 24-4n-9e
Set 8⅝-in. 82 ft., drilling 1,740 ft.

Oilwell Drlg. 1 B. W. Blain.....SE NW SW 24-4n-9e
Derrick.

St. Clair County

Burgess 1 Eidman.....NW SW SE 18-1s-6w
Spud and S.D.

S. C. Newhart 1 Miller.....NE NW NW 6-2s-6w
Location.

Saline County

Massy & Duggs 1 Hardesty.....W½ NE SW 20-7s-5e
Moving in.

Potter 1 Thaxton.....E½ NW SW 28-8s-7e
Old well drilled deeper, old T.D. 2,220 ft., rig.

Shelby County

O. C. Brunswold 1 Harley-Vantis.....SW NW NW 36-13n-3e
Whipstock at 2,085 ft.

J. Moore et al 1 fee.....SW SW NE 30-10n-3e
Glen Dean 1,453 ft., underreaming 8-in. at 1,500 ft.

Guild et al 1 Hunter.....NE SE NE 7-10n-3e
Set 10-in. 87 ft., drilling 605 ft.

Ross & Durbin 1 Flenner.....SW SW SE 9-10n-4e
Rigging up standard tools 1,702 ft.

A. Ginter 1 E. Fox.....NW SE NW 34-10n-4e
S.D. 160 ft.

Tazewell County

Bartelmay 1 Mathis.....SW NW SW 24-5n-3w
Drilling 580 ft.

Wabash County

Harris & Meyers 1 E. L. Denman.....SW SW SE 17-1s-12w
Rig.

Hays & Yingling 1 Fischer....SW NW NW 18-1s-13w
Moving in.

Washington County

Taylor Drlg. 1 S. S. Barnett.....SW SE SW 20-3s-4w
Derrick.

Wayne County

Nat. Pet. 1 H. States.....W½ SE SW 36-1n-6e
Menard 2,374 ft., Tar Springs 2,501 ft., Glen Dean 2,601 ft., Cypress 2,805 ft., drilling 3,150 ft.

Hudson 1 L. Lowe.....S½ SE NE 5-1s-6e
Base Pennsylvanian 2,055 ft., Menard 2,385 ft., Glen Dean 2,595 ft., Golconda 2,695 ft., Barlow 2,795 ft., Benoist 3,006 ft., Aux Vases 3,075 ft., Ste. Genevieve 3,144 ft., drilling 3,272 ft.

C. R. Craft 1 J. F. Fischer.....SE NW NW 34-1s-7e
S.D. 2,835 ft.

J. C. Meyers 1 W. H. Sprague.... SE NW SE 4-2s-7e
Glen Dean 2,596 ft., Golconda 2,680 ft., Barlow 2,780 ft., Paint Creek 2,977 ft., Aux Vases 3,113 ft., Ste. Genevieve 3,162 ft., Fredonia 3,234 ft., 5½-in. 3,220 ft., St. Louis 3,234 ft., T.D. 3,270 ft.

White County

Arrow 1 Eastwood.....SW SE SE 29-3s-14w
Set 10-in. 135 ft.

A. C. Burgen 1 Mary Kramer....SE SW NE 36-3s-8e
Drilling 2,805 ft.

H. Hubbard 1 Fox.....SE NW SW 20-3s-14w
Elev. 516 ft., Menard 557 ft., Glen Dean 725 ft., Gol-

(Continued on Page 92)

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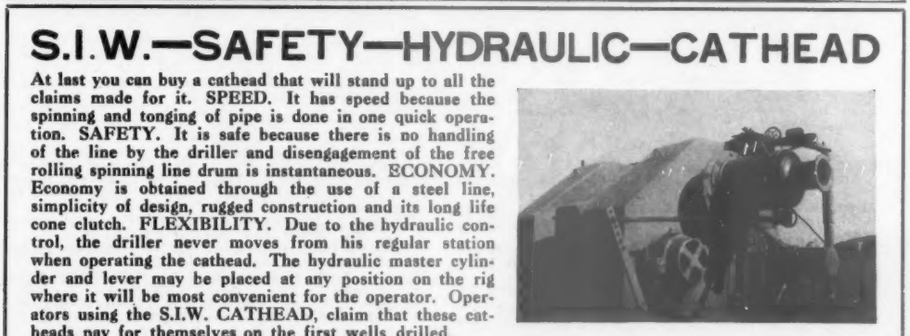
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By
ROBERT INGRAM

Increased Wildcat Locations Offset Lull in Kansas Fields

KANSAS field operations during this week were mainly routine with a comparatively low number of completions (31) and no discoveries except for the opening of a new pay horizon in the Iuka pool of Pratt County. The western part of the state was the center of renewed exploration with a large number of wildcats staked.

The new pay in the Iuka pool was opened by Skelly Oil Co. 1 Helmke, W½ SW SW 1-27-13w. The well struck the Arbuckle lime at 4,367 ft., and after being treated with acid, made a daily potential of 1,572 bbl. Previous production in the pool had been from the shallower Simpson dolomite.

Bay Petroleum found formations running low in 1 Campbell, a wildcat 2 miles south of Macksville in Stafford County, E½ NE NE 33-24-15w. The well topped the anhydrite at 1,016 ft., the Lansing-Kansas City lime series at 3,771 ft., and is now drilling below 4,296 ft. toward the Arbuckle dolomite objective. The tops are reported running 130 ft. structurally low.

Another western Kansas wildcat being watched closely is 1 Hirman being drilled by H. F. Wilcox Oil & Gas Co. and Helmerich & Payne in Republic County, C SE NW 30-2s-1w. The well topped the Mississippian lime at 2,688 ft., and is drilling in chert below 2,750 ft.

In Logan County, I. T. I. O. 1 Cronkite, NE SE NW 22-15n-4w, a wildcat southwest of the town of Navina, was a failure. It was drilled to 7,135 ft. in the Simpson formation which carried white and salty sand.

Wildcat activity continued at a good clip with a total of 18 new locations in unexplored territory. Four wildcats were staked in Rice County, and Russell and Butler counties each reported two. Other wildcat tests were scattered through 10 counties.

SUMMARY OF COMPLETIONS

Kansas

	No.	Bbl.	Footage
Oil wells: Trapp	3	635	10,046
Kraft	2	442	6,756
Stoltenberg	1	3,000	3,324
Zenith	2	2,875	7,524
Hall-Gurney	2	2,678	4,351
Other fields	15	13,502	17,065
Gas wells: Hugoton	1	*11.3	2,712
Total	26	23,132	51,778
Dry holes	5	.....	15,921
Total	31	.....	67,699
Recompletion	1	3,600	.....

*Million cu. ft.

Nebraska

Dry holes: Falls City	1	.....	2,260
Wildcats	3	.....	8,692
Total	4	.....	10,952

AVERAGE DAILY PRODUCTION

LEADING KANSAS FIELDS

	Jan. 11	Jan. 4
Burrton	7,650	7,200
Ritz-Canton	4,100	3,850
Graber	2,900	1,500
Hollow-Nikkel	1,450	1,700
Voshell	1,750	1,800
Wellington	1,400	1,000
Lorraine	950	1,050
Stoltenberg-Wilkins	4,025	4,025
Bloomer	4,450	4,050
Chase	5,100	5,200
Geneseo	4,600	3,700
Silica	15,050	15,800
Wherry	2,850	2,300
Trapp district	13,950	14,050
Balance Russell County	19,450	17,800
Sedgwick County	3,150	3,150
Bemis	9,800	9,050
Burnett	6,650	5,100
Kingman County	615	615
Stafford County	9,655	9,655
Greenwood County	8,000	7,750
El Dorado	6,900	6,850
Total Kansas	189,000	181,450

KANSAS COMPLETIONS

Barton County

Trapp pool: Cities Service 9-A Bitter, SE SE SW 5-16-13w, 420 bbl., Arbuckle, T.D. 3,346 ft.
Kraft pool: Carter 3 Hogan, W½ NW NW 11-17-11w, 394 bbl., Arbuckle, acid, T.D. 3,355 ft.
Phillips 1 Frees, S½ SW NW 35-16-11w, swabbed 48 bbl., Arbuckle, T.D. 3,401 ft.

Butler County

El Dorado outpost: Cities Service 6 fee, SW NE NE 17-26-4e, 180 bbl., acid, Lansing 1,634 ft., T.D. 1,658 ft.

Cowley County

Wildcat: William M. McKnabb and Winfield 1 Land & Power, dry, T.D. 3,352 ft.

Ellis County

Bemis pool: Cities Service 17-B Hall, SE 26-11-17w, 3,000 bbl., acid, Arbuckle 3,555 ft.
Fairport pool: Stanolind 2 Austin, NE SE NE 36-12-15w, 48 bbl., Topeka, T.D. 2,999 ft.

Ellsworth County

Wilkins pool: Central Petroleum 3 Frances, S½ SE NW 19-17-9w, 3,000 bbl., acid, T.D. 3,239 ft.
Stoltenberg pool: Magnolia 5-A Schroeder, E½ SE SW 26-16-10w, 3,000 bbl., acid, T.D. 3,324 ft.

Graham County

Wildcat: Cities Service 1 Kuehnle, NE SW SW 34-9s-21w, dry, T.D. 3,990 ft., Arbuckle 3,982 ft.

Grant County

Hugoton field: United Producing 1 Trusdale, SE SE NW 12-30-35w, 11,312,000 cu. ft., gas, acid, Herington lime 2,516 ft., T.D. 2,712 ft.

Greenwood County

Reece pool: K. R. H. 3 Jackson, SW SW NE 23-26-9e, 15 bbl., T.D. 2,225 ft., P.B. 2,212 ft., Mississippi 2,198 ft.

McPherson County

Ritz-Canton pool: Henry Bennett 4 J. B. Koehn, NE NE SW 36-19-2w, 195 bbl., Viola, T.D. 3,397 ft.

Phillips County

Ray pool: Cities Service 2 Ray, NE SW SE 32-5-20w, 2,983 bbl., Reagan sand 3,542 ft.

Pratt County

Iuka pool: Skelly 1 E. H. Helmke, W½ SW SW 1-27-13w, 1,572 bbl., acid, T.D. 4,367 ft.
Wildcat: Harper & Vandeventer 1-A Tollman, NE NE NE 15-28-11e, dry, casing 1,196 ft., T.D. 1,301 ft.

Reno County

Burrton pool: Amerada 1 H. Wilson, SE SW SW 23-23-4w, 58 bbl., T.D. 3,345 ft.

Rice County

Keesling pool: Bay 2 Keesling, SE SW 3-20-9w, 45 bbl., Arbuckle 3,221 ft.
Raymond pool: Atlantic Refining 4 Scott, W½ NW SE 20-20-10w, 148 bbl., Arbuckle 3,304 ft.

Rooks County

Dopita pool: Sharon 1 Toepffer, C NE SE 36-8-18w, 49 bbl., acid, Arbuckle 3,439 ft.
Laton pool: S. J. Krueger 1-D Tatkenhorst, W½ NE NE 15-9-16w, swabbed 84 bbl., acid, Lansing 3,283 ft.

Rush County

Albert pool: Schermerhorn-Winton 3 Giesick, S½ S½ SE 26-18-16w, 178 bbl., Cambrian, T.D. 3,575 ft.
Wildcat: Lion et al 1 Werth, W½ SW SE 10-16-19w, dry, T.D. 3,728 ft., shot 3,442-46 ft. and 3,418-25 ft.

Russell County

Hall pool: Texas 1-D Kell, W½ NW SE 36-14-14w, 1,324 bbl., acid, T.D. 2,997 ft.
Trapp pool: Shell 4 Sellens, CNL SW 33-15-13w, swabbed 127 bbl., Arbuckle 3,350 ft.
Sullivan pool: Transwestern 10 William Polcyn, NW NE SW 11-24-11w, 782 bbl., Arbuckle 3,263 ft.
Hall pool: Cities Service 2-D Miller, E½ NE SE 31-14-13w, 1,241 bbl., acid, T.D. 3,089 ft.
Cities Service 3-B Strecker, SW SW NE 36-14-14w, 113 bbl., Gorham sand 3,149 ft., T.D. 3,165 ft.
Trapp pool: W. I. Southern 1 Hinderliter, W½ NE 33-15-13w, 88 bbl., acid, Arbuckle.

Sedgwick County

Robbins pool: Olson Drilling 1 MacCready, N½ NE NE 15-19-2w, Mississippian 3,547 ft., T.D. 3,550 ft., dry.

Stafford County

Zenith pool: Bay 4 McNickle, S½ NE SE 2-24-11w, 906 bbl., acid, Viola, T.D. 3,758 ft.
Sittner pool: Helmerich & Payne 2 Krug, E½ NW SW 2-22-12w, 1,360 bbl., acid, Arbuckle 3,614 ft.
Zenith pool: Stanolind 3 R. Sims, SW SE NE 11-24-11w, old well drilled deeper to Viola lime, 3,772 ft., 3,600 bbl., acid.
Phillips 3 Tretbar, S½ NW NE 12-24-11w, 1,969 bbl., acid, T.D. 3,766 ft.

KANSAS DRILLING REPORT

Barton County

C. Piggott et al 1 Beran ..... C E½ NE NE 24-17-12w
Drilling 2,055 ft.
British American 1 Linder ..... NE NE SW 24-17-14w
Drilling 1,040 ft.

Brown County

McAlpine et al 1 Tyler ..... NE SW SW 4-3-15
Drilling 260 ft.

Cowley County

Don Young et al 1 Lantz ..... NE NW SW 14-34-3
Drilling 700 ft.
Sinclair Prairie 1 Gibson ..... SE SE NW 29-34-3
Underreaming 10-in. casing 1,920 ft.

Ellis County

Stearns Drilling 1 Witt ..... C S½ NE SW 28-12-16w
Lansing 3,342 ft., show oil, ½ B.O.P.H. at 3,502 ft., drilling 3,560 ft.

Graham County

Ewers-Simpson 1 Bundy ..... C SW SW 12-9-22w
Drilling 960 ft.

Greenwood County

C. E. Ash 1-B Taylor ..... NW NE NW 7-27-12
Drilling 1,220 ft.
Ward McGinnis 1 Sharp ..... C SW SW 9-28-12
S.D. 1,938 ft.

Nemaha County

A. C. Bumpus 1 Achten ..... C S½ SE NW 12-4-14
Drilling 1,920 ft.

Pawnee County

Atlantic and Skelly 1 Wratil ..... C E½ SE NW 15-22-15w
Drilling 3,290 ft.

Reno County

Cities Service 1 Crandall ..... NW NW NE 23-23-10w
Simpson shale 3,890 ft., Simpson sand 3,897 ft., drilling 2,923 ft.

Republic County

Wilcox 1 Hirmon ..... C SE NW 30-2-1w
Topeka 1,817 ft., Lansing 2,050 ft., Mississippi lime 2,680 ft., drilling 3,000 ft.

Sedgwick County

Olson Oil 1 Macredie ..... C N½ NE NE 15-29-2w
T.D. 3,576 ft., acid, swabbed 3 bbl. an hr.

Stafford County

Bay Pet. 1 Campbell ..... C E½ NE NE 33-24-15w
Lansing 3,771 ft., conglomerate 4,130 ft., drilling 4,330 ft.
Vickers Pet. 1 Stewart ..... C E½ NE NE 22-25-11w
Ft. Riley 1,839 ft., Topeka 2,991 ft., Lansing 3,487 ft., base Kansas City 3,770 ft., Viola 3,895 ft., T.D. 3,910 ft.
Perry Thayer et al 1 Roach ..... NW NW SE 12-22-14w
T.D. 3,787 ft., swabbed 4 B.O.P.H.

Thomas County

Alva Billings 1-A Ryan ..... C E½ NE SE 28-8-32w
7-in. casing 3,765 ft., T.D. 3,805 ft.

Woodson County

Aikman & Braden 1 Sasse ..... NW NE SW 36-23-13
Show oil 1,747-53 ft., T.D.

FOREST CITY BASIN

ST. JOSEPH, Mo., Jan. 13.—Richardson County had only four active tests the past week and of those, just one was in the proven area of the Falls City pool. The scheduled producer is 6 Sandrock, being drilled by Ohio Oil Co. in SW NW NE 20-1n-16e. A mechanical breakdown or so delayed progress, but the test was below 1,000 ft. on its way to Hunton lime, which is the pay zone in the Falls City pool.

In western Richardson County two tests have started in the Humboldt area. J. E. Palensky et al were below 1,300 ft. at 1 Kalous in SW SW 5-2n-13e, 2 miles west of Humboldt. McNulty & Bass have spudded 1 Cander 2 miles south of Humboldt in C SW SW 15-2n-13e.

Test Started in Missouri

Atchison County, Missouri, entered the drilling play during the week when Ed Jackson of Atchison, Kans., and Fred Rust of Wichita spudded 1 June Hays 3 miles northwest of Watson in C NE NE 22-66n-42w. Clampitt & Richards have the contract and are drilling with rotary tools.

Holt County, Missouri, became active again as crews returned to the Kilby & Flory 1 Meyer 3 miles northwest of Mound City in SE NE NW 27-62n-39w. Depth when work stopped before Christmas was 545 ft.

NEBRASKA COMPLETIONS

Richardson County

Falls City pool: Uri Oil 1 Ogle, NW SE SE 9-1n-14e, Hunton 2,258-60 ft., T.D., dry.
Wildcat: Powers & Stalder 1 Lee, NE NW NE 16-1n-14e, T.D. 2,341 ft., Hunton 2,314 ft., dry.
I. T. I. O. 1 Ege C NE SE 19-3n-16e, Hunton 2,615 ft., T.D. 2,651 ft., dry.
Francis Krone 1 Morehead, C SE NE 35-4n-16e, Arbuckle 3,736 ft., T.D. 3,770 ft., dry.

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Among the Drilling

GLENN H. McCARTHY, Houston, Tex., is moving a rotary to the Anchor field, Brazoria County, Texas, for his 1 R. H. Carr, a projected 10,500-ft. test located southwest of the discovery well.

R. H. DEARING & SONS, contractors of Wichita Falls, Tex., were preparing to move in rotary rig for the drilling of a new Clay County, North Texas, wildcat for Carlos Wagner and associates. The test will be 1 Thaxton, Section 3, T.&N.O. Survey, about 4 miles northeast of the town of Henrietta in the east-central part of the county.

CROSBY Drilling Co., Houston, Tex., is drilling below 9,100 ft. in Strake Petroleum Co., Inc. 1 Griffith, a wildcat located southwest of the Alta Loma field in Brazoria County, Texas Gulf Coast. In Lavaca County, Texas, plug is expected to be drilled during the week at M. McMurray 1 Allen, a prospective Wilcox sand pool opener located east of the town of Halletsville.

L. T. (BOBBY) BURNS, contractor and independent producer of Wichita Falls, Tex., is preparing to start a mile northeast outpost test to the Browning field which he opened in southwestern Clay County, Texas, in 1939. The new test will be 1 J. E. Southerland, 330 ft. from the north and east lines of the west 100 acres of Block 63, J. H. Belcher subdivision, just west of the community of Deer Creek. Contract depth is 5,500 ft. and it is scheduled for spudding this week.

ROWAN Drilling Co. will move a rotary about 2 miles southwest of the Manvel field, Brazoria County, Texas, where 1 Mattingly, a projected 9,000-ft. test, will be drilled jointly with Nichols Oil Co. Location is in the H.T.&B. Survey, Section 25.

NOBLE Drilling Co., Houston, Tex., is preparing to test Stanolind Oil & Gas Co. 3 Hulen, located in the Alta Loma field, Galveston County, Texas Gulf Coast. The well is bottomed at 9,175 ft. and 5-in. liner is being run for completion.

E. C. NORWOOD, drilling contractor of Wichita Falls, Tex., has halted operations at the projected contract depth of 6,500 ft. at the deep exploratory test drilled for Bruce Sullivan and Hill & Hill of Fort Worth in Tarrant County, Texas, and just 5 miles north of Fort Worth. Softening of formations was found at 6,453 ft. and slight stains of oil were encountered from this level to its present total depth of 6,512 ft. Negotiations are under way to deepen several hundred feet, the deepening contract to be on a day-by-day basis. The test is located on the Putnam tract, Milley Gilbert Survey.

O. W. DYER, Houston, Tex., is preparing to make a production test of Continental 3 St. Charles, located several hundred feet east of the discovery well of the St. Charles field in Aransas County, Texas. The well was drilled to a total depth of 10,514 ft. and is being completed through perforated casing. Another operation is reported at the Thomaston field of De Witt County, Texas, for Atlantic Refining Co.

RED IRON Drilling Co., Marshall, Tex., has been awarded contract by A. A. Folsom of Gladewater, Tex., for a test in the recently opened Hawkins field of Wood County, eastern Texas. It is to be 1 Harrison Price, Edward Wideman Survey, about 2,000 ft. southwest of the Manziel 1 Bell, wild gas well which has been plugged after cratering was feared last week.

Herschell R. Scivally, Shreveport, La., independent oil operator, has announced his connection with the Sultana Drilling Co., Inc., Shreveport, effective January 1, 1941. Mr. Scivally is a native of Oklahoma, attended the state university and received his early oil-field training in Wyoming as a roustabout and roughneck. In 1924 he joined the Amerada Petroleum Corp. as scout and land man, serving in southern Oklahoma, Texas, Kansas and Louisiana. In 1932 he became head of the land department of the Arkansas Natural companies, which title and position he held until 1936 when he resigned to enter the oil business for his own account

W. S. BOYLE, Houston, Tex., is preparing to spud 1 Terrell, a wildcat located in the William Murphy Survey, Jackson County, Texas Gulf Coast. The well is being drilled jointly with John Mayo.

HENDERSON COQUAT, is moving a rotary to San Patricio County, Southwest Texas, for his 1 E. C. Willman, a projected 5,300-ft. wildcat located about 1 mile southwest of the townsite of Mathis.

LON H. CRON, Houston, Tex., is moving a rig to the Cabeza Creek area, Goliad County, Texas, where location was recently made for 1 Victoria Albrecht which will be drilled to 3,600 ft. The well is located in the Manuel Carriona Survey and will be drilled jointly with J. O. Nelson.

DELTA Drilling Co., Tyler, Tex., announced renewed plans last week to start a deep wildcat to the 8,500-ft. level in the area just north of Henderson in Rusk County, eastern Texas. The drilling firm has long been planning a test for the area; however, it now appears it will get under way in the near future. To be 1 Kangerga Brothers, it is in the R. Lane Survey, 3 miles north of Henderson. The drilling company has obtained right-of-way for a gas fuel line from the East Texas field to the site of the new deep test.

ROWAN & HOPE, San Antonio, Tex., started drilling operation on an interesting test in Starr County, Southwest Texas, for Transwestern Oil Co. The well is 2 Cameron, located about 2 miles north of the Rincon field in the North Rincon area.

E. F. MORAN, Tulsa, has contract for the J. W. Cummings 1 Oakland City College in Section 16-8s-14w, Posey County, Indiana. The lease is a farmout from the Gulf Refining Co.

LONG & WOLFE, drilling contracting firm of Graham, Tex., has opened a new Swastika pay field in Fisher County, West Central Texas, for F. A. Stephenson and associates. The discovery is 1 J. L. Maberry, near McCaulley and in the SE SE Section 56, Block 1, H.T.&B. Survey. After being shut in for several months at a total depth of 3,312 ft.,

Contractors

the well was opened last week to flow 57 bbl. of oil in 1 hour. Official gage is awaited.

BASIN Drilling Co., Owensboro, Ky., found the Waltersburg sand dry in the 1 Oakland City College, a test being drilled in conjunction with the North Central Oil Co. The test is located NE NE SW 16-8s-14w, Posey County, Indiana; immediately to the north is a well producing from the Aux Vases sand. Basin also has contract for drilling a wildcat in Union County, Kentucky, for the Sun Oil Co. and the Kentucky Natural Gas Co. The test, to be known as the 1 Neels heirs, is located about 3 miles southwest of the Corydon pool which produces from the McClosky lime.

BUTLER & HORNE Drilling Co., Dallas, Tex., has opened a new field in Jones County, West Central Texas, for Humble Oil & Refining Co. The test is 2 J. C. Sears estate, Section 37, Block 18, T.&P. Survey, about 2 miles south of the Swastika field and a similar distance east of the Noodle Creek field. Saturation was topped at 3,010 ft. and drilled to 3,020 ft. at which point the hole filled 800 ft. the first hour. Casing is being reamed down approximately 70 ft. to the top of the oil section and will be set for completion.

RHODES Drilling Co., Abilene, Tex., has moved in rotary for drilling 1 John Windham and G. O. Cresswell, a wildcat in extreme southeast Taylor County, West Central Texas. The test will be drilled for Jim Dunigan of Breckenridge, Tex., and Ray Robinson of San Angelo, Tex., on a farmout from the Shell Petroleum Co., Inc., and is scheduled to be carried to 3,850 ft. to test the Strawn sand. Shell assigned to the operators six 80-acre checkerboarded tracts, including the drill site, with Rhodes reportedly receiving 360 acres. Location is 467 ft. out of the SE cor of SW Section 381, George Hancock Survey. Spudding is scheduled for the latter part of this week.

MYERS Drilling Co., Centralia, Ill., has derrick up for its 1 Wick, NW NW NW 24-2s-10w, in the Albion area of Edwards County, Illinois.

BIG CHIEF Drilling Co. has staked location for 1 Schrader, Section 27-2n-13w, Wabash County, Illinois. The test is in the Lancaster pool.

PIONEER Drilling Co., Salem, Ill., has received contract from Exchange Oil Co. (Sinclair) for drilling 1 Etta Stillman, NW NW NW 35-3s-5e, Hamilton County, Illinois. The test offsets Dick Duncan 1 Zellar, discovery well in the area, which made 350 bbl. per day from the McClosky lime.

BREWER Drilling Co., Artesia, N. M., has completed its 1 Kindle in the Dayton pool of Eddy County, New Mexico, for a 1,500,000 cu. ft. gas well. Located 2,310 ft. from the north and east lines of Section 26-18s-26e, the well was carried to a total depth of 1,193 ft. in lime and was bridged back to 995 ft. preliminary to shooting with 40 qt. from 985 to 995 ft.

UNITED Drilling Co. made location last week for its 1 Correll in the Lancaster pool of Wabash County, Illinois. The test is located in Section 27-2n-13w.

ARROW Drilling Co., Tulsa, was drilling below surface pipe on its 1 Eastwood, SE SW SE 29-3s-14w, the Calvin pool, White County, Illinois. Same company was coring for the Cypress sand at 2,541 ft. on its B-2 Hon and was preparing to abandon its 1 Joseph Crooks, NW SE SW 28-3s-14w, after an attempt to shut off water in the Biehl sand failed. Arrow recently completed C-1 F. M. Hon, NW SE SE 32-3s-14w, in the Benoist sand.

H. H. WEGENER has completed the discovery well near Benton, Ill., the E. S. Adkins 1 Orient Coal Co., NE SW SE 24-6s-2e, Franklin County, Illinois. The well was completed in the Tar Springs sand at 2,120-48 ft. after being shot with 15 qt. The well swabbed 142 and 167 bbl. in two 24-hour tests. Wegener is preparing to spud in on the first townsite well in Benton.

LUPHER Drilling Co., Mount Pleasant, Mich., has built rig for a south offset test to the 1 Bowman, discovery well of the Vernon field of Isabella County, Michigan. The well will be the operator's 1-B Bowman, drilled on a farmout in SE SE NE 27-16n-4w. The 1 Bowman, drilled by H. E. Pollock, was completed April 3, 1930, for a natural production of 75 bbl. per day at 3,724 ft. The producer flowed until about 1 year ago. After a light acid shot, however, it was returned to flowing production and continues to flow about 20 bbl. daily.

MUSKEGON Development Co., Muskegon, Mich., is moving in machinery for drilling Chapman Oil Co. 1 Reber, a wildcat in the Sheridan Township of Clare County, Michigan. Location is in C E½ SE NW 2-17n-3w. At Chapman Oil Co. 1 Reichstiener in the Monitor Township of Bay County, Michigan, the contractor was drilling below 2,740 ft. The Dundee was topped at 2,725 ft. and it was estimated that the expected pay zone should be found in the next 100 ft. Location of the 1 Reichstiener is C S½ N½ NE 3-14n-4e.

As seen at Paul Rossi 8 Brooks in the Lake Centralia-Salem pool of Illinois: Ted Harrell, drilling and production superintendent for Mr. Rossi; Carl Nicklos, with the acidizing department of Halliburton Oil Well Cementing Co.: Al Bowen, tool pusher for Schneider & Gwin (contractors on the well); Claude Clements, driller, and C. O. Pace, in the cementing department of Halliburton. The 8 Brooks, a deep Trenton test in 29-2n-2e, at last reports was drilling below 4,600 ft. and showing for a good producer. Hole is being carried deeper to test lower zones

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MICHIGAN OPERATIONS

Five Wells Started Following Walker-Tallmadge Gusher

By OTTO C. PRESSPRICH

SAGINAW, Mich., Jan. 13.—Spurred by Smith Petroleum Co. 4 Visser showing, which, pinched, continued to produce 1,000 bbl. a day, or an estimated 4,000 open flow potential, a revival of interest was apparent in Michigan oil circles in the Tallmadge district of Ottawa County. The well is in Section 34. Five of the 18 drilling permits issued during the week by the state Conservation Department are for tests in that area and in adjoining Section 33. The Smith gusher is an offset to a 10-bbl. producer.

Otherwise, a succession of dry holes was listed in the weekly completions report as the lull in new production possibilities continues. Allegan County had the only producer completions as three small wells were recorded for initial daily output totaling 150 bbl., a showing offset by the fact that it also was location for five of the dozen failures.

Michigan basin interest was divided between several points. One was in Huron County where deepening was begun on the Markle 1 Johnston wildcat which, late last spring, was reported as the first producing well in the Michigan "thumb" section. However, the well shut down 6 months ago at about 3,250 ft. It is planned to deepen about 350 ft. to test Sylvanian formation. The test is in Section 8 of Bloomfield Township, where, in Section 16, Cryden Oil Co. 1 McIntyre, below 2,300 ft., was near Monroe test, having failed to hit oil in either Traverse or Dundee.

Delayed by mud, rigging of the new rotary is at last under way on Gulf 1 Bateson deep test in Monitor Township, Bay County. Meanwhile, high-gravity oil is being extracted from the controlled heavy flow of natural gas at a rate of from 50 to 80 bbl. a day. The oil, of exceptional quality, is bringing Michigan's record crude price, $1.48 a bbl. A 9,000-ft. depth is the objective. Whether it can be attained depends probably on drill pipe in the hole. The well blew up and caught fire early in December. An oil test in Dundee was awaited meanwhile on Chapman Oil Co. 7 Rochstiner in Section 3 of Monitor.

Drilling into Dundee water dashed hopes of C. L. McGuire, Inc., for a field south and east of Coleman. The test, 1 Crosse, in Section 33, Warren Township, Midland County, was halted at 3,850 ft. Tests were near on a wildcat test in Arthur Township, Clare County. Sun Oil Co. planned to deepen 1 McIntosh in Section 16, Hamilton Township, and in Winterfield two other tests headed into the Traverse.

Prospects improved in the Winfield area of Montcalm County, as Daily Crude Oil Co. prepared to acid treat its 3 Weatherby discovery offset which was reported flowing better than 100 bbl. a day, naturally.

An offset test of Michigan's most prolific well, the 1 Bowman, in Section 27, Vernon Township, Midland County, is scheduled by Lupher Drilling Co. The Bowman, Vernon field discovery well, has been flowing since early in 1930 from 3,724 ft. It is reputed to have produced 200,000 bbl. of crude.

The Beaverton revival resulting from the Drury 800-bbl. gusher of several weeks ago was helped by results of Sun 1 Tope in Section 35. The Gladwin test, readied for acid treatment, had a natural flow of about 20 bbl. In Arenac County, a west extension of the old Adams field was under test with a fair show.

The Monarch Development Co. wildcat in Kalkaska County was ready for test of Antrim shale below 770 ft.

In addition to the five Ottawa permits, the week's list included three locations for Allegan, two for Arenac. Others included wildcats in Eaton, Oceana and Calhoun, and other tests in Clare, Montcalm, Van Buren, Isabella and Midland counties.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Allegan County	3	150	4,781
Ottawa County	2	1,010	3,602
Dry holes: Allegan County	5	.....	8,341
Ottawa County	2	.....	3,346
Van Buren County	2	.....	2,382
Other	3	.....	5,835
Total	17	.....	28,287

MICHIGAN COMPLETIONS

Allegan County

Dorr Township: McClanahan Oil Co. 1 Funk, SW NW SW 28-4n-12w, dry, T.D. 1,684 ft.
Heath Township: C. W. Cook 1 Blakeslee, SE NE SE 24-3n-14w, dry, T.D. 1,574 ft.
Martin Township: Bridger Basin Oil Co. 1 Hardin, SW NE SE 7-2n-11w, dry, T.D. 1,741 ft.
Overisel Township: N. R. Dodd 1 Masselink, SE SE SE 14-4n-13w, dry, T.D. 1,650 ft.
W. L. McClanahan 1 Campagner, SW SE SE Sec. 11, 80 bbl., acid, T.D. 1,577 ft.
Salem Township: Union Oil Co. 1 Johnson, SW SE SE 10-4n-13w, 35 bbl., acid, T.D. 1,596 ft.
Lang & Lewis 4 Fieser, SE NE SW Sec. 15, 35 bbl., acid, T.D. 1,608 ft.
V. R. Wilson 1 Meyer, SE SE NE Sec. 33, dry, T.D. 1,734 ft.

Cass County

Silver Creek Township: Silver Creek Oil Co. 1 Wonderlich, E½ SE NW 23-5s-16w, dry, T.D. 813 ft.

Isabella County

Wise Township: American Drilling Co. 1 Bolle, SE NE SW 8-16n-3w, loc. abandoned.

Midland County

Warren Township: C. L. Maguire 1 Crosse, NW SW NE 33-16n-2w, dry, T.D. 3,850 ft.

Monroe County

Dundee Township: Capehart & Merchant 1 Spur, NW NW NW 29-6s-6e, dry, T.D. 2,172 ft.

Ottawa County

Georgetown Township: Gordon Oil Co. 1 Leavenworth, NW SW NE 2-6n-13w, 10 bbl., acid, T.D. 1,812 ft.
Southwest Development Co. 2 Macauley, SW SE NW Sec. 19, dry, T.D. 1,782 ft.
Holland Township: J. W. McIntosh 1 Riemold, NW NW NE 34-5n-15w, dry, T.D. 1,564 ft.
Tallmadge Township: Smith Petroleum Co. 4 Visser, NW SW NW 34-7n-13w, 1,000 bbl., natural (pinched), at 1,790 ft.

Van Buren County

Arlington Township: Twin Drilling Co. 1 Tomcala, SE SE SE 24-2s-15w, dry, T.D. 1,078 ft.
Bloomingdale Township: Homrich & Kendall 1 Powers, SE SW NE 10-1s-14w, dry, T.D. 1,305 ft.

Calgary Syndicate Plans Development in Athabaska

In the Athabaska area of northern Alberta, F. A. Skelhorne and associates of Calgary have taken over for development a 23,000-acre tract, and will drill a series of three tests as soon as weather is favorable. The group sponsoring the operations includes Davies Petroleums, Brown Oil Corp., Snyder & Head, drilling contractors, and George Harris, all of Calgary. The acreage is an extension of the Athabaska tar-sand area, which outcrops at McMurray but is here buried about 2,200 ft. under shale and sandstone. Drilling in the general acreage has indicated both oil and gas.

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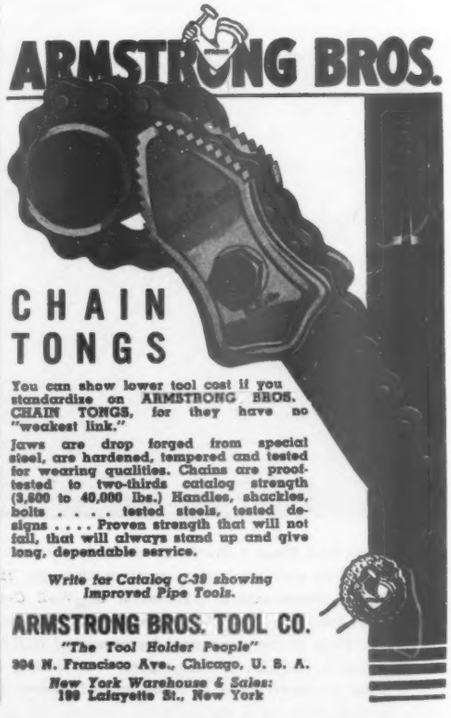

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Big De Soto Parish Gas Well Extends Joaquin Field

By GEORGE WEBER

SHREVEPORT, La., Jan. 13.—One of the largest gas wells in Louisiana was completed in De Soto Parish by Southern Production Co., Inc., last week, extending proven production in the Joaquin field to the southeast. The 1 Gannon-Frost Lumber Co. is estimated to have a potential of 177,000,000 cu. ft. from the porous lime pay in the Rodessa member of the lower Glen Rose formation.

The well is the first to be completed by Southern, which has acquired considerable acreage in the Joaquin field for development during 1941. The porous lime was cored at 4,820-50 ft. and 4,900-35 ft. and casing was perforated at 4,820-42 ft., 4,847-60 ft. and 4,900-20 ft. with a total of 332 shots. The well was then treated with 7,500 gal. of acid, which increased its potential over 100 per cent, according to estimates. Following development of sufficient reserves, Southern proposes to connect the Joaquin field with Monroe, 120 miles to the northeast.

SUMMARY OF COMPLETIONS

	No.	Prod.	Footage
North Louisiana			
Oil wells: Caddo	5	856	7,448
Gas wells: Joaquin	1	*177	4,975
Dry holes: Wildcats	1	.....	4,024
Total	7	.....	16,447
Arkansas			
Injection wells: Bellevue	1	.....	419
Oil wells: Smackover	1	115	3,134
Nick Springs	1	100	3,702
Dry holes: Wildcats	1	.....	2,142
Total	3	.....	8,978
East Texas Border			
Oil wells: Smithland	2	53	4,701
Dry holes: Caddo	1	.....	1,620
Total	3	.....	6,321

*Million cu. ft.

Claiborne Parish Activity

A second test in prospective oil sections in the Skelly and Sunray 1 Valentine, Claiborne Parish wildcat and gas-condensate field discovery well, failed last week to show commercial oil production. The test, which has proven gas-condensate production at 6,316-33 ft., was plugged back to 6,244 ft. late in December and perforated at 5,326-34 ft., testing salt water. Last week perforations were squeezed and the well reperforated at 5,316-27 ft. It swabbed an estimated 6 bbl. of fluid hourly, consisting of 97 per cent salt water and 3 per cent oil. Operators are again squeezing the perforations for a further test of the section.

North of the Lisbon field, Union Producing 1-A Meadows, deepest current test in this area, is drilling and coring below 10,600 ft. A slight gas show is reported in the top of the Smackover lime, but operators deferred testing it until the well has been drilled further into the formation.

Sibley Test Fails

In Webster Parish, Moffit & Perritt 1 Kennon, located in the Sibley gas field, encountered a lime section with oil odor between 5,781 ft. and 5,824 ft. The gas sand was found at 5,591-5,655 ft. A string of 5½-in. casing was set at 5,822 ft. and the plug drilled out to 5,824 ft. The well tested 5,200 ft. of salt water. Operators will retest the section.

NORTH LOUISIANA COMPLETIONS

Bellevue—Bossier Parish

Tide Water Associated 4 K. O. Lodwick..SW SE 10-19-11
Injection well, top sand 365 ft., 4-in. casing 377 ft., T.D. 419 ft.

Caddo—Caddo Parish

W. C. Curry 3 Spell.....SW SE SW 28-21-15
Pumped 30 bbl., 6-in. casing 1,372 ft., 4,000 gal. acid, T.D. 1,587 ft.

Fryman & Lyles 1 Drouet.....SE NW NW 12-20-16
Pumped 25 bbl., 7-in. casing 1,355 ft., 1,000 gal. acid, T.D. 1,509 ft.

Gulf 10 Wadkins.....SW SE SE 22-21-15
771 bbl., 6-in. casing 1,426 ft., 5,000 gal. acid, T.D. 1,597 ft.

Renwick & Wickizer 3 Stiles.....NE SE NE 17-21-16
Pumped 10 bbl. oil, much salt water, 6-in. casing 996 ft., T.D. 1,010 ft.

Texas Co. 23 Raines.....15-21-15
Pumped 20 bbl. oil, 65 bbl. salt water, 6⅝-in. casing 1,603 ft., T.D. 1,745 ft.

Joaquin—De Soto Parish

Southern Prod. Co., Inc. 1 Gannon-Frost Lumber unit SE NW NE 11-11-16
177,000,000 cu. ft. gas, R.P. 2,400 lb., 7-in. casing 4,973 ft., perf. between 4,820 ft. and 4,920 ft., 7,500 gal. acid, T.D. 4,975 ft.

Wildcat—Tensas Parish

H. L. Hunt 4 Chicago Mill & Lbr. Co..SW NW 14-13-10
T.D. 4,024 ft., dry.

NORTH LOUISIANA DRILLING REPORT

Bienville Parish

R. W. Burnett 1 Locke.....NE NW NE 9-15-10
S.D. 1,100 ft.

Caddo Parish

W. G. Ray Drlg. Co. 1 Noel est.....SE 30-21-14
Drilling shale 7,147 ft.

Caldwell Parish

V. V. Ryan 1 La. Central.....NE NE 16-12-4e
S.D. 900 ft., repair rig.

De Soto Parish

J. E. Stack et al 1 Cook.....NW NE 32-13-14
Drilling 2,377 ft.

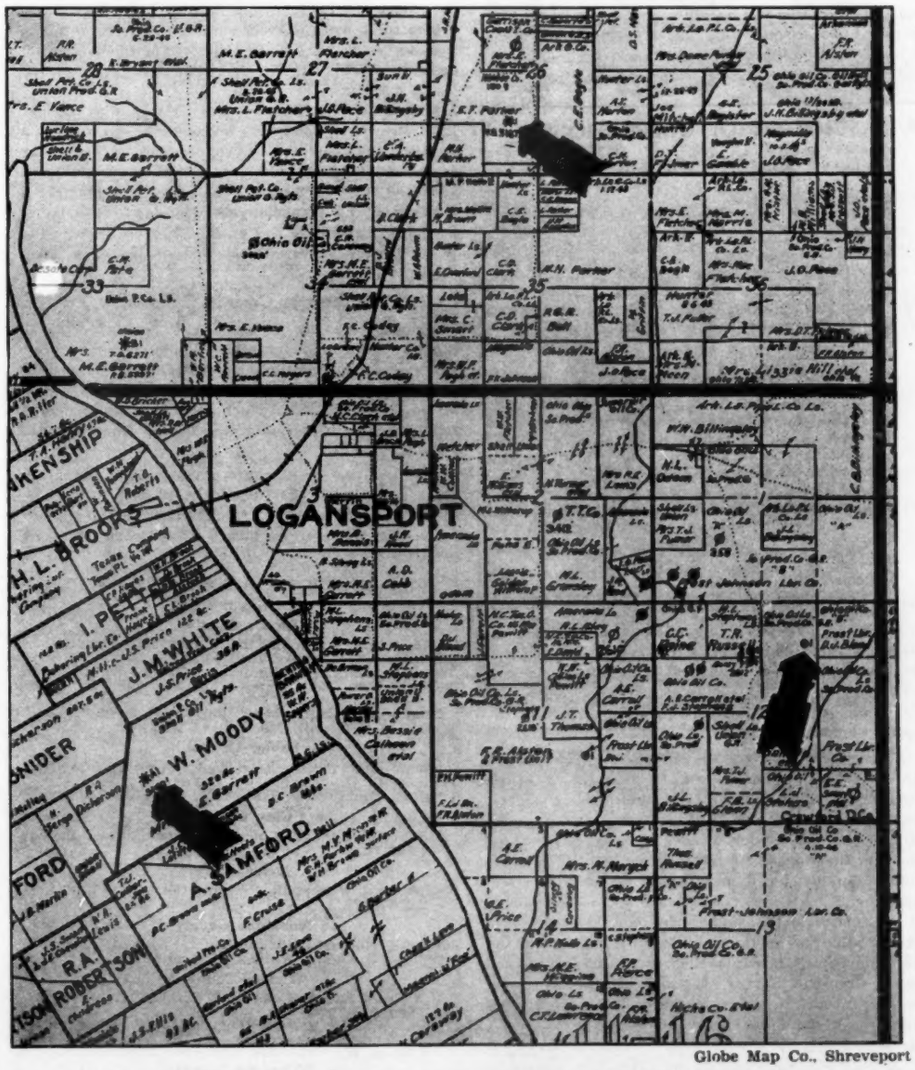
Grant Parish

Bering Oil Co. 1 Goodpine.....SW NE 18-8n-1w
Set 10-in. casing 267 ft.

Claiborne Parish

Skelly and Sunray 1 Valentine.....NW NW 31-20-6w
Squeezed and perf., testing salt water and small amount oil, arranging to squeeze and reperf.

(Continued on Page 91)



Globe Map Co., Shreveport

One of the largest gas wells ever completed in Louisiana was brought in in the Joaquin field of De Soto Parish by Southern Production Co., Inc., when their 1 Gannon-Frost Lumber unit showed 177,000,000 cu. ft. open-flow potential. The well represents a southeastern extension to the field, recently extended southward, and proven for a considerable distance into Louisiana on the north, as indicated by the arrows. Southern Production, a subsidiary of Southern Natural Gas Co. of Birmingham, Ala., is developing new gas production to replace declining reserves in the Monroe field

Eight Wildcats Are Started in Four North Texas Counties

By R. MARNE SANFORD

WICHITA FALLS, Tex., Jan. 13.—Despite the fact that several promising wildcat prospects have failed to bear out early expectations throughout the North Texas district during the past few weeks, wildcatting still continued on the increase as eight new exploratory holes were either announced or actually started during the past week in four different counties. Jack County counted three new tests, Montague County two, Clay County two, and Wilbarger County one.

Wilbarger County's prospective discovery of 2 weeks ago, Big Six Oil 1 Morris, is being completed to open a new 2,900-ft. producing area 3 miles west of the town of Harrold. It had shown for a producer prior to the holidays.

Although not definite and not entirely confirmed, Continental Oil Co. is reported to be planning a new deep 5,500-ft. test in Jack County and only 1¼ miles south of its 1 Robertson. With location tentatively set as the Johnson Brothers tract, D. D. Bruton Survey, Abstract 1671, the test would be just south of the company's 1 Robertson which was officially gaged about 3 weeks ago to open a new field from the Mississippian and Ellenburger sections. This well was rigged up for deepening the following week when the oil flow started a rapid decline. The test had been completed for about 88 bbl. of high gravity oil daily, flowing, after acid treatment, from a section of saturation in the lower part of the Mississippian lime and in the upper Ellenburger lime.

Another new starter for Jack County and in the Antelope area of the northwestern corner is Elmer Gatewood, Wichita Falls, 1 E. J. Crawford, in the William Donald Survey, 6 miles east of Antelope. Contracted to 3,500 ft. and possibly deeper, it is on a 2,500-acre block in the Donald Survey, Abstract 470.

Jack County's third new test is by Paul P. Steed, Dallas, and Joe Cooper, Jacksboro, and is on a block of 2,500 acres in the southeastern part of the county. The location is in the southwestern corner of the Gertrude Sewell farm, in the southwest part of the Daniel Grenshaw Survey, Abstract 128. Located on a mapped subsurface structure, the test is about 5 miles northwest of Joplin and a similar distance southeast of Jacksboro.

SUMMARY OF COMPLETIONS

North Texas

	No.	Bbl.	Footage
Oil wells: Hull-Silk field	3	1,984	12,686
Seymour field	2	670	5,043
K.M.A. field	2	1,287	7,966
Electra field	2	78	3,487
Olney field	3	120	2,911
Other fields	3	923	7,304
Dry holes: Fields	4	.....	13,332
Total	19	.....	52,729

West Central Texas

Oil wells: Jones County	3	439	6,290
Echo field	1	344	2,201
Cook field	1	25	1,375
Gas wells: Santa Anna field	1	*3.97	2,268
Dry holes: Newell field	2	.....	4,203
Wildcats	2	.....	5,973
Water well: Brooksmith gas field	1	.....	1,662
Total	11	.....	23,972

*Million cu. ft.

Montague County

A new wildcat for the northern part of Montague County is Tom F. Hunter 1 W. E. Barcus, 330 ft. from the north and east lines of Block 78, Kaufman County School Lands. Contracted to 3,800 ft., the location is about 1 mile southeast of the shallow Holt field. It is on a block of acreage held by Continental Oil Co., Hunter having given 1,000 acres toward drilling the test.

For the second exploratory hole in Montague County during the week, Gulf Oil Corp. is preparing to deepen a failure in the recently opened Ringgold field near the Clay and Montague county line. It is 3 Worsham, Section 33, Block 4, H.&T.C. Survey, a failure in the regular Ringgold field pay level. Total depth is 5,850 ft. where testing has been under way for several weeks but without success. The testing spudder will be moved off and a rotary moved over the hole early this week.

Clay County

Seeking a mile northeast extension to his Browning field opened in 1939, L. T. (Bobby) Burns, Wichita Falls, is preparing to move in to a location staked early the past week. It is 1 J. E. Southerland, 330 ft. from the north and east lines of the west 100 acres of Block 63, J. H. Belcher subdivision, just west of the community of Deer Creek. This is the first activity for the field since shortly following its discovery when Burns drilled three more producers and several dry outposts, together with a dry south offset to the discovery well drilled by Shell Oil Co., Inc. Contract depth of the test is 5,500 ft.

Four miles northeast of Henrietta in Clay County R. H. Dearing & Sons were preparing to move rig to a location staked by Carlos Wagner and associates the early part of the past week. It is in the Thaxton lands, Section 3, T.&N.O. Survey. The operator announced a location for this immediate area last April, 1940, but it was never drilled. It was on the Thaxton lands in the W. C. Donley Survey 4 and was spudded and abandoned.

Wilbarger County Discovery

About 2 weeks ago Big Six 1 A. P. Morris, Section 3, Block 14, H.&T.C. Survey, about 3 miles west of Harrold, indicated commercial production and was shut in until after the holidays. Early this week the test was opened for several short flows which rated it at an estimated 100 bbl. daily. Saturation was drilled from 2,989 to 2,911 ft.

New deep test for Wilbarger County and in the northern part is Walter Gant 1 Mock & Harrell, Section 23, Block 11, H.&T.C. Survey. Contracted to 6,000 ft., surface casing has been set at 425 ft. and rotary is being moved in.

NORTH TEXAS COMPLETIONS

(24-hour ratings)

Archer County

Holliday field: Alexander 2 White, 7 bbl., 452-63 ft.
Burns 1 Perkins, dry at 2,740 ft.
Annarene field: Art & Spragins 1 Meade, dry at 973 ft.
Hull-Silk field: Bert Ligon 6 Moss A, 792 bbl., 4,275-4,340 ft.
Magnolia 16 Rutty B, 482 bbl., 3,778-89 ft.
Texas 6 Wilson B, 710 bbl., 4,532-57 ft.

Baylor County

Seymour field: British American 2 Turbeville, 334 bbl., 2,507-14 ft.
British American 3 Turbeville, 336 bbl., 2,526-29 ft.

Clay County

Petrolia field: F. H. Golke 1 Morgan Jones, dry at 1,733 ft.

Jack County

Bryson field: Panhandle Refining Co. 5 Leffel, 20 bbl., 2,918-39 ft.

Montague County

Benton & Holmes field: Phillips 1 Fields, dry 3,813 ft.
Phillips 2 Fields, abandoned location.

Wichita County

K.M.A. field: Fain-McGaha Oil 7 Griffin, 787 bbl., 3,734-3,830 ft.
High Point Oil 2 Burnett A, 500 bbl., 4,030-4,136 ft.
Electra field: Petroleum Inv. Co. 19 Douglas, 10 bbl., 1,781-90 ft.

Wilbarger County

Fargo field: Amerada 1 Dodson B, 896 bbl., 3,983-4,002 ft.
Electra field: Waggoner 29 Waggoner 68 bbl., 1,662-97 ft.

Young County

Olney field: Kimmell Lee & Co. 1 Campbell A, 35 bbl., 952-69 ft.
Kimmell Lee & Co. 1 Campbell B, 75 bbl., 954-70 ft.
Kimmell Lee & Co. 1 Campbell C, 10 bbl., 962-72 ft.
James field: T. D. Humphrey 1 Butler, dry at 5,046 ft.

NORTH TEXAS WILDCAT REPORT

Archer County

W. B. Hamilton 22 Cartwright, 660 ft. from W and S lines, James Webb Sur., Abst. 664, T.D. 5,211 ft., P.B. 5,164 ft., 60-qt. shot 5,149-64 ft.:, cleaning out.
W. B. Omohundro 1 Browning, 467 ft. from S and E lines, Sec. 7, G.E.L. Sur., top Caddo lime 5,130 ft., 5½-in. 5,127 ft., T.D. 5,147 ft., perf. casing 4,040-50 ft., tested salt water, S.D.O.
Shell 1 Coleman, 330 ft. to S and E lines of Lot 1, Sec. 74, A.T.N.C.L. Sur., top Gunsight lime 1,416 ft., show oil 3,932-44 ft., drilling 4,792 ft.
Southern Pet. Exp. 1 Wilson A, 330 ft. W from railroad and 330 ft. from N line, Lot 4, Sec. 73, A.T.N.C. L. Sur., tight well, top Caddo 5,161 ft., 5½-in. 5,162 ft., show oil in lime 5,161-5,200 ft., waiting on tools.
Walter Gant 1 Hunter, SE NW Sec. 7, Blk. 1, H.&T.C. Sur., top Ellenburger 5,370 ft., set 7-in. at 5,370 ft., T.D. 5,391 ft., waiting on spudder to drill plug.
W. B. Omohundro 1 Coleman, Blk. 52, Madison County School Lands Sur., S.D.O. 5,959 ft.
Gibson & O'Donohoe 1 Jentsch, 330 ft. from N and E lines, H. Jentsch Sur., Abst. 995, 5½-in. 4,260 ft., T.D. 4,806 ft.
Sam Kruger 1 Turbeville, 450 ft. from E and 389 ft. from S lines, NW Sec. 170, Robert Carson subd., 1,600-ft. test, drilling 1,139 ft.
King Oil 1 Taylor, Lot 1, Sec. 13, A.T.N.C.L. Sur., top Caddo 4,692 ft., drilling 4,798 ft.
E. C. Harlin 1 Waggoner, 150 ft. from S and W lines, Sec. 30, Clark & Plumb subd., T.D. 4,942 ft., making electrical survey.
White & Duncan 1 Snyder, 1,600 ft. from W and 750 ft. from N lines Lot 21, Thomas Toby Sur., Abst. 643, 750-ft. test, drilling 730 ft.
H. F. Smiley 1 Larr, SW NW Sec. 136, H.S. of C.R. Sur., 1,400-ft. test, location.
Adams Oil & Gas 1 Powell, SE Lot 14, Sec. 1, S.P.R.R. Sur., Abst. 406, 5,200-ft. test, location.

Baylor County

Hattie B. Madden 2 J. J. James, Sec. 150, T.&N.O. Sur., show oil 1,352-63 ft., lost drill pipe at 2,308 ft., S.D.
Rogers & Lanfair 1 Howe, J. Howe Sur., Abst. 572, show oil 1,445-52 ft., S.D.O. 3,115 ft., T.D.
L. T. Burns 1 Burns, Sec. 73, T.&N.O. Sur., 4,500-ft. test. Location.

Clay County

Carlos Wagner 1 L. C. Thaxton, Sec. 2, T.&N.O. Sur., 6,500-ft. test, rigging up rotary.
Petroleum Producers 1 O. O. Ross, Sec. 8, J. Wyont Sur., Abst. 902, 6⅝-in. 5,540 ft.
Bridwell Oil 1 W. H. Myers, C. Thompson Sur., Abst. 444, 5,500-ft. test, location.

Denton County

Amon G. Carter 1 W. P. and A. P. Allen, S. Westbrook Sur., drilling 7,805 ft.

Hood County

W. G. Martin 1 W. G. Thorman, E. cor. of 2,956-acre ranch, F. F. Anderson Sur., 5,000-ft. test, spudded and S.D.
Aztec Oil 1 Gallagher, SW SE Robert Alway Sur., 3,000-ft. test, T.D. 1,180 ft.

Jack County

Continental 1 Robertson, M. J. Swan Sur., Abst. 1650, lime, show oil 5,345-86 ft., D.S. test recovered 240 ft. oil in 11 minutes, ran 5½-in. casing for test, top Mississippian lime 5,307 ft., base Mississippian 5,360 ft., top Ellenburger 5,380 ft., flowed 104 bbl. per day from 5,346-86 ft., oil flow declined, prep. to drill deeper.
R. A. Conkling 1 M. Hoffle, A. James Sur., Abst. 318, 3 mi. S of Antelope, 3,500-ft. test, T.D. 3,108 ft., fishing casing.
Rathke Oil 1 Moseley, J. Harrison Sur., Abst. 259, 1,500 M.c.f. gas 4,645-50 ft., S.D.O. 5,340 ft.
K. N. Davis 1 Jones, NW cor. E½ Sec. 2555, T.E.&L. Sur., 1 mi. SE Perrin, 2,500-ft. test.
Noah Davis 1 Rankin, E½ Sec. 2555, T.E.&L. Sur., moving in materials.
Three Bee Investment Co. 1 Armstrong, 700 ft. from S and 1,200 ft. from W lines, Sec. 2, W.P. Blake Sur., Abst. 1598, 3,300-ft. test, 6⅝-in. 3,031 ft., show oil 3,031-44 ft.
Harper-McClintock 1 Kinder, 1,400 ft. from E and 467 ft. from N lines, Sec. 2667, T.E.&L. Sur., drilling 657 ft.
O. J. Perrin 1 Brumbelow, 1,045 ft. from S and 720 ft. from E lines, H. C. Ayers Sur., Abst. 4, S.D. 3,505 ft. after electrical survey.

Parker County

Higginbotham 1 Gilbert, T.&P. Sur., Abst. 1958, T.D. 4,800 ft., fishing.

Montague County

Walter Gant 1 Will Laird, R. T. Millard Sur., Abst. 470, 7 mi. W of Sunset, oil sand 4,857-83 ft., T.D. 6,651 ft., P.B. to 6,596 ft., perf casing 4,865-73 ft., swabbed 67 bbl. oil in 2½ hr., S.I. for 5 days and opened to swab 80 bbl. oil in 3½ hr., made total of 225 bbl. oil in 4 days, swabbing unit broke, S.D.
T. F. Hunter 1 Fatheree, L. S. Gilliland Sur., 3 mi. W Illinois Bend, 6,000-ft. test, T.D. 5,043 ft., P.B. 3,394 ft. and set 6⅝-in. casing at 3,384 ft., W.O.C.
Benson & Benson 1 Joe Benton, Abel A. Lewis Sur., 2 mi. SE of Ringgold field, top Caddo lime 5,718 ft., T.D. 6,213 ft., P.B. 5,840 ft. to test conglomerate 5,812-30 ft.
J. G. Hammond 1 Jester, 84-acre tract in E Wingate

Sur., Abst. 835, 2 mi. W Mallard, top Caddo lime 6,282 ft., S.D. 6,505 ft.
Sinclair Prairie 1 W. G. Hawkins, 631 ft. from N and 330 ft. from E lines of farm in Sec. 17, H.&T.C. Sur., 3 mi. SE of Ringgold, drilling 3,075 ft.

Tarrant County

Bruce Sullivan 1 W. C. Putnam, 200-acre tract in Milley Gilbert Sur., S.D.O., may deepen, T.D. 6,512 ft.

Throckmorton County

Homer Moore and J. E. Dodson 1 J. O. Crump, Blk. 956, T.E.&L. Sur., location.
Humble 1 Allie McKnight, 1,100 ft. from N and 660 ft. from E lines Sec. 2, D.L.&C. Sur., Abst. 1264, 5,000-ft. test, location.

Wichita County

Big Six Oil 1 Edmonson, 150 ft. from N and W lines, Sec. 13, Red River Lands subd., drilling 1,360 ft.
Fred Browning 1 W. L. Warren, 996 ft. from N and 330 ft. from W lines, Sec. 32, W.V.F.L. Sur., S.D. 4,001 ft., prep. P.B. and test show oil 1,760-72 ft.
Golding & Cochran 1 D. R. Preston B, 2,970 ft. from N and 990 ft. from W lines, Sec. 26, Blk. 7, H.&T.C. Sur., 10-in. at 105 ft., saturation from 3,887-3,903 ft. and 3,939-41 ft., cemented 5½-in. at 3,897 ft., drilled plug and bailed down with show of oil, 300-qt. shot, no results, S.D. 4,083 ft.
Akin, Dimock & Costley 1 Dodson, 1,470 ft. from W and 150 ft. from S lines, Dodson farm in W. H. Anderson Sur., Abst. 1, 1,350-ft. test, location.
King Oil 1 Ancell, 330 ft. from N and E lines of L. C. Gibbs Sur., Abst. 390, 4,000-ft. test, show oil 3,600-03 ft., 6⅝-in. 3,600 ft.
R. D. Dorian 1 Ancell, SE Sec. 36, Blk. 5, H.&T.C. Sur., 4,000-ft. test, location.

Wilbarger County

W. H. Gant 1 Mock, Sec. 23, Blk. 11, H.&T.C. Sur., 6,000-ft. test, S.D.O. 425 ft.
Big Six Oil 1 Morris, Sec. 3, Blk. 14, H.&T.C. Sur., show oil 2,895-2,907 ft., 7-in. 2,895 ft., T.D. 2,905 ft., testing est. 60 bbl. oil per day, still testing.
Ray Brothers 1 Henry Streit, 72-acre tract in S. N. Gosnel Sur., Abst. 1231, 1,800-ft. test, fishing 1,265 ft.
W. B. Omohundro 1 W. T. Waggoner, 1,100 ft. from E and 150 ft. from S lines of Sec. 49, Blk. 4, H.&T.C. Sur., 6⅝-in. 1,229 ft., show oil 1,229-47 ft., rigging up spudder.

Wise County

Cranfill & Rogers 1 McKay, Sec. 8, Falls C.S.L. Sur., drilling 7,045 ft.
Manahan Oil 1 E. R. Collier, J. M. Wade Sur., Abst. 868, drilling 6,047 ft.

Young County

E. Lennington 1 Perry, 165 ft. N of C of river and 46 ft. from W line of 126-acre A. W. Perry farm in Oliver T. Brown Sur., Abst. 25, S.D. 165 ft.
Ben H. Rankin 1 Mary Logan, SW part Blk. 2, J. W. Doty Sur., 8 mi. NE Graham, 2 mi. W Nelson field, small showing oil 3,575-3,600 ft., 5½-in. 3,565 ft., drilling plug and bailed dry, S.D. 3,613 ft.
B. C. Gilmore 1 Bagley, 210 ft. from E and 650 ft. from S lines of Leroy W. Ross Sur., Abst. 1352, 700-ft. test, location.
L. T. Burns 1 Bloodworth, 150 ft. from N and 783 ft. from W lines of Sec. 214, T.E.&L. Sur., 1,000-ft. test, location.
S. D. Glover 1 C. E. Luton, 150 ft. from S and E lines of J. L. Elmore Sur., Abst. 1421, drilling 510 ft.
Dorian & Farrell 1 Grigsby, Sec. 416, T.E.&L. Sur., 3,200-ft. test, drilling 3,200 ft.

WEST CENTRAL TEXAS

FORT WORTH, Tex., Jan. 13.—Activity the past week in the West Central Texas district was marked by the opening of two new fields, both from the Swastika sand level, one each in Jones and Fisher counties.

The Jones County discovery was by Humble Oil & Refining Co. and is just 2 miles south of the 2-year-old Swastika field and an equal distance east of the Noodle Creek field. The discovery well is 2 J. C. Sears estate, Section 37, Block 18, T.&P. Survey. A 10-ft. section of saturation was drilled early in the week from 3,010-20 ft. and the hole started filling at the rate of 800 ft. per hour. In 3 hours the well started flowing through casing to be rated good for 400 bbl. daily, natural. The 7-in. casing was reamed down from 2,940 ft. and cemented at the close of the week at 3,011 ft. Plug will be drilled early this week.

In Fisher County the new discovery was at a wildcat which has been shut down, untested for some 4 months. It is F. A. Stephenson 1 J. L. Maberry, Section 56, H.T.&B. Survey, near the townsite of McCaulley. It was opened early the past week to flow 57 bbl. of oil in 1 hour. Later testing settled the output at about 93 bbl. of oil in 10 hours, swabbing. Official completion is expected early this week. Pay is in the Swastika sand with saturation from 3,280-85 ft. Top of the sand was 3,277 ft. and casing is set at 3,271 ft.

New Wildcats

About midway between the Akard field and the new Kelso field opened late in December in southern Jones County, W. D. Brookover and associates have staked location for 1 A. M. Wimberley, a 2,600-ft. Swastika sand test located 320 ft. from the south and west lines of NE Section 87, De Witt County School Lands Survey. It is 1½ miles east of Danciger 1 Kelso discovery from the Cook sand and is just west of the Akard field.

Taylor County was given a new deep wildcat when Jim Dunigan of Breckenridge obtained a farmout from Shell Oil Co., Inc., and staked a 3,800-ft. location 5 miles

(Continued on Page 90)

Southwest Texas Fields

(Continued from Page 73)

recent drill-stem test recovered several hundred feet of pipe-line oil.

SOUTHWEST TEXAS COMPLETIONS

Aransas County

McCampbell field: Shasta 1 Freeman, 63 bbl., 3/32-in. choke, perf. casing 6,819-24 ft., T.D. 7,223 ft.

Nueces County

Agua Dulce field: Burwyn Oil Co. 1 Pure, 131 bbl., ⅛-in. choke, perf. casing 6,452-67 ft., T.D. 6,769 ft.
Clara Driscoll field: Stanolind 1 Hule, 128 bbl., 5/32-in. choke, perf. casing 5,276-80 ft., T.D. 5,448 ft.
Texas 2 Taylor, 39 bbl., 5/32-in. choke, T.D. 5,368 ft.
Minnie Bock field: Averill & Cox 1 Driscoll, dry, T.D. 3,867 ft.
Richard King field: Southern Minerals 2 Walker, 95 bbl., ⅛-in. choke, T.D. 5,655 ft.
Stratton field: Corpus Christi Corp. 12 Wardner, 127 bbl., ⅛-in. choke, T.D. 6,602 ft.
Wildcat: H. H. Howell 1 Mettiz, dry, T.D. 6,507 ft.

Refugio County

Fagan field: Barnsdall 4 Marberry, 129 bbl., ⅛-in. choke, perf. casing 5,621-33 ft., T.D. 5,638 ft.
Tomoconnor field: Quintana Petroleum Corp. 44 Heard, 607 bbl., ¼-in. choke.

San Patricio County

East White Point field: W. R. R. Oil Co. 3-976 State, 145 bbl., 7/64-in. choke, perf. casing 5,610-15 ft., T.D. 5,655 ft.
Midway Victory Oil Co. 2-C Floerke, dry, T.D. 5,350 ft.

Victoria County

Placedo field: H. B. Ownby Drilling Co. 1 Marek, 71 bbl., 9/64-in. choke, T.D. 4,765 ft.
Wildcat: Humble 1 Ragsdale, dry, T.D. 6,736 ft.

LAREDO DISTRICT

Cedro Hill field: Magnolia 21 Duval County Ranch Co., 39 bbl., ⅝-in. choke, T.D. 1,476 ft.
Hoffman field: Gilcrease 1-B Salazar, 25 bbl. oil and 15 bbl. salt water, T.D. 2,636 ft.
Labbe field: W. C. Butler 1 Labbe, gas well, T.D. 2,897 ft.

Jim Hogg County

Manila field: Navarro Oil Co. 1-B Allen, 36 bbl., ⅛-in. choke, sand 2,642-58 ft., T.D.

Live Oak County

Wildcat: Henderson Coquat 1 Goebel, dry, T.D. 3,515 ft.

McMullen County

Calliham field: Marion Production Co. 10-A Lark, dry, T.D. 1,029 ft.
White Creek field: B. Patterson 1 Kibbler, dry, T.D. 1,500 ft.
Wildcat: Dan Purvis et al 2 Nueces Land & Livestock, dry, T.D. 895 ft.

Starr County

Boyle field: Fidelity Oil & Royalty Co. 5-D Carruth, dry, TD., 3,855 ft.
Yzaguirre field: W. R. Davis Co., Inc. 1 Seyfriedt, 16 bbl., ¼-in. choke, perf. casing 5,234-46 ft., T.D. 6,006 ft.

Webb County

Glen field: Interstate Minerals, Inc. 51 Lopez, 120 bbl., pumping, T.D. 2,188 ft.
Transwestern 2-B Bruni, 23 bbl., pumping, T.D. 2,-199 ft.
Wildcat: O. W. Killam 1-60 Bruni, dry, T.D. 3,396 ft.

SAN ANTONIO DISTRICT

Bastrop County

Wildcat: C. R. Franklin 1-A McDonald, dry, T.D. 743 ft.

Caldwell County

Wildcat: Wiegand Brothers 1 Freeman, dry, T.D. 2,950 ft.

Guadalupe County

Elm Creek field: P. G. Rouse 8 Lenz, 6 bbl., pumping, sand 798-829 ft., T.D.

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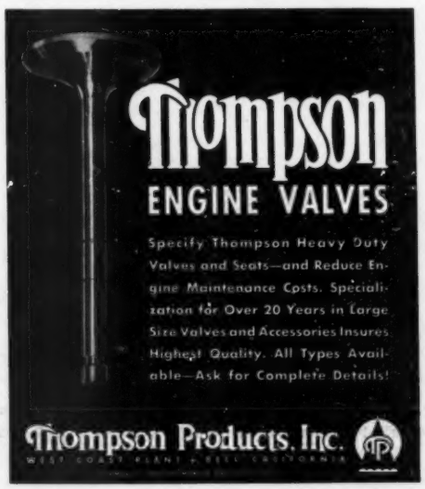
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LOUISIANA GULF COAST

Cameron Parish Wildcat Has Three Promising Sands

By F. L. SINGLETON

NEW ORLEANS, La., Jan. 13.—Lisbon-Iberia Oil Corp. 1 Calcasieu National Bank, a wildcat located in the Lakeside area, northwest of the Grand Lake field, Cameron Parish, was holding the attention of operators in the Louisiana Gulf Coast district as preparations were made to test a series of promising oil and gas sands. Drilled to a total depth of 10,215 ft., 6-in. casing was cemented on bottom following an electrical survey which recorded sand with gas and distillate odor at 9,797-9,838 ft. Sand showing distillate was also cored at 9,990-10,060 ft., while sidewall cores recovered sand with an oil and gas odor at intervals from 6,192-9,557 ft. The well is located in 19-12s-4w, in an area in which Pure Oil Co. drilled two dry holes several months ago.

Humble Oil & Refining Co. was attempting to revive production on the Bayou des Glaize dome, Iberville Parish as testing was under way at 3-B Wilberts Minerals Co. Drilling was halted at 9,573 ft. when the well attempted to blow out, and the well was tested through perforated casing at 8,777-92 ft. On a 3-hour drill-stem test, the well blew dry gas, and 180 ft. of gas-cut mud and 90 ft. of salt water recovered. The well is temporarily shut down for repairs, and the company will resume testing the first of the week. The present well is located a short distance from 2-B Wilberts Co. which established production at 8,400 ft. However, production soon declined and the well was later abandoned.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells	16	4,591	143,098
Dry holes: Fields	1	.....	1,292
Gas wells	1	.....	8,670
Wildcats	2	.....	19,899
Total	20	.....	172,959

Schooner Bayou Extended

An east extension of aproximately 800 ft. was indicated for the Schooner Bayou field, Vermilion Parish, as Union Oil Co. of California prepared to test 1-B School Board. The hole is bottomed at 11,000 ft. and 7-in. casing was cemented on bottom. The discovery pay was topped at 10,457 ft., which is about normal with that of the discovery well. Interest in this area is now centered on the same company's 4 Louisiana Land & Fur Co., 1½ miles northeast of the discovery well which is drilling in sidetracked hole below 8,200 ft.

In Terrebonne Parish, and located on the Point au Fer prospect, Barnsdall 2 Nelson is drilling in sidetracked hole below 5,786 ft. This well was originally drilled to a total depth of 11,400 ft. and was plugged back to redrill a sand section at 6,979-96 ft. which showed up favorably on an electrical survey. In the same area, Barnsdall is preparing location for 1 State-Point au Fer, which was taken over from the Louisiana Land & Exploration Co.

In the Delta Farms field and located on the Jefferson Parish side of the structure, Texas 2 Bayou Perot is bottomed at 9,167 ft. and 7-in. casing was cemented for completion. This is the second well to be drilled by the company, being located in 6-17s-23e, several hundred feet from 1 Bayou Perot, which marked up an important southeast extension to the field, and opened a new producing horizon.

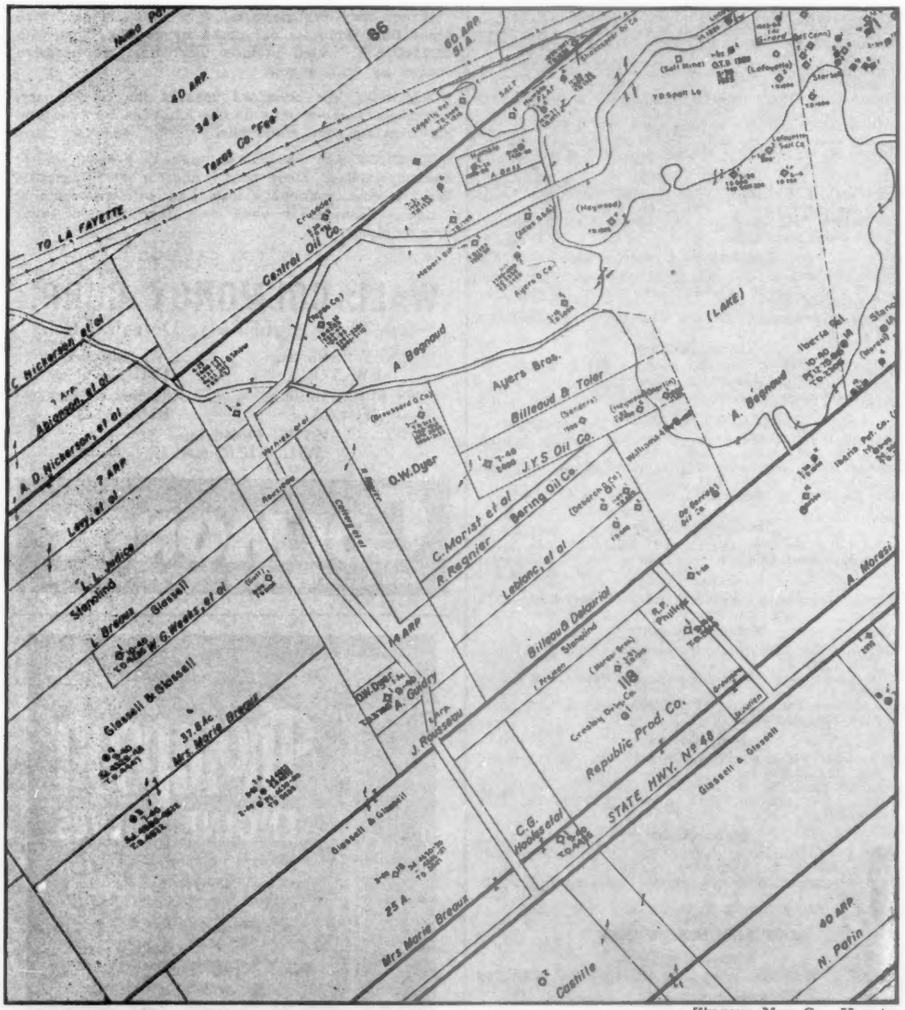
Lake Salvador Extension

An east extension of approximately 1,300 ft. to the Lake Salvador field, St. Charles Parish, is in the making as Texas Co. prepared to complete its fourth producer, 4 State Lake Salvador, in 26-16s-22e. The hole is bottomed at 10,639 ft., and 7-in. casing was cemented at 10,355 ft.

Union Sulphur Co. 1 Latrielle, approximately 1,000 ft. south of the discovery well of the South China field, Jefferson Davis Parish is bottomed at approximately 9,000 ft., and 7-in. casing has been cemented for testing. Details as to where the sand section was encountered were not available. In the South Roanoke field and located as a northeast outpost test, Continental Oil Co. continues to drill below 10,228 ft. in 1 Jaenke, with no shows of oil or gas reported. Seven-inch casing was recently cemented at 9,668 ft.

On the west side of the Iowa field, Jefferson Davis Parish, Magnolia 16 Wait has been completed in the 6,900-ft. pay for an initial production of 116 bbl. per day flowing through a ¼ and 12/64-in. chokes. This well recovered salt water in the newly opened 8,200-ft. Frio sand, and was plugged back and completed in the Marginulina sand from which several wells are producing. Barnsdall 4 Fontenot was abandoned when drill pipe became stuck after plugging back to sidetrack from an original total depth of 8,777 ft.

In the Ville Platte field, Evangeline Parish, Continental Oil Co. is completing two new Wilcox sand producers, and is increasing its operation in the field as the result of the recent completion of 1 Evangeline Bank & Securities which has extended production more than a mile southwest. Among the wells being completed are 3 Fontenot-Deshotels, and 1 Ortego Guillory, both being bottomed in the 9,900-10,000-ft. Wilcox play, while new locations included 5 B. G. Fontenot in Section 41 and 7 Natalie Hirsch in Section 44.



Zingery Map Co., Houston

Development has been revived on the southwest flank of the Anse La Butte dome, St. Martin Parish, due to new sand discoveries. Glassell & Glassell 1 J. J. Fournet, a projected deep test is about 2,000 ft. southwest of the nearest producer

LOUISIANA GULF COAST COMPLETIONS

Calcasieu Parish

Wildcat: W. T. Burton et al 1 Mayo Realty Co., 8-11s-8w, dry, T.D. 10,939 ft.

Cameron Parish

West Hackberry field: Superior 11 Benson Vincent, 413 bbl., 12/64-in. choke, perf. casing 7,820-49 ft., 7,854-7,910 ft., T.D. 8,390 ft.

East Baton Rouge Parish

Wildcat: H. C. Cockburn 1 Gianelloni, dry, T.D. 8,960 ft.

Evangeline Parish

Ville Platte field: Continental 2 Deville, 512 bbl., 7/8-in. choke, T.D. 9,029 ft.
H. K. Hughes 2 Pitre, 498 bbl., ¼-in. choke, perf. casing 10,052-10,104 ft., T.D. 10,140 ft.

Iberia Parish

Fausse Point field: Sun 9 Kling & Wallet, dry, T.D. 1,292 ft.

Jefferson Davis Parish

Iowa field: Barnsdall 4 Fontenot, dry, T.D. 8,777 ft.

La Fourche Parish

Golden Meadow field: Brown-Woods 2 Cheramie, 108 bbl., ⅛-in. choke, T.D. 5,503 ft.
Superfine Oil Co. 1 Morgan, 195 bbl., 10/64-in. choke, T.D. 3,750 ft.
Frankos et al 2 Collins, 129 bbl., 10/64-in. choke, perf. casing 5,146-54 ft., T.D. 5,171 ft.
McMurray Production Co. 3 Collins, 12-19s-22e, 105 bbl., 7/64-in. choke, perf. casing 5,434-46 ft., T.D. 5,480 ft.
Texas 10 State-Catfish Lake, 76-19s-12e, 106 bbl., ⅜-in. choke, perf. casing 2,622-42 ft., T.D. 2,836 ft.
Leeville field: Texas 78 State, 27-21s-22e, 399 bbl., 7/8-in. choke, T.D. 8,650 ft.

Plaquemines Parish

Quarantine Bay field: Gulf 25 State, 441 bbl., ¼-in.

choke, perf. casing 8,385-8,405 ft., T.D. 8,490 ft.

St. Charles Parish

Lake Salvador field: Texas 3 State, 637 bbl., 7/8-in. choke, perf. casing 10,146-10,174 ft., T.D. 10,235 ft.

St. Martin Parish

Anse La Butte field: Stanolind 3 Bergeron, 178 bbl., 5/32-in. choke, perf. casing 3,670-3,700 ft., T.D. 4,163 ft.

Bayou Bouillon field: Superior 1-A Iowa St. Martin, gas well, perf. casing 7,484-7,508 ft., T.D. 8,670 ft.

St. Mary Parish

West Cote Blanche field: Texas 6 State, 227 bbl., 10/64-in. choke, perf. casing 7,640-58 ft., T.D. 7,854 ft.

Terrebonne Parish

Caillou Island field: Texas 49 State, 367 bbl., 7/8-in. choke, perf. casing 7,886-7,804 ft., T.D. 7,950 ft.

Dog Lake field: Texas 13 State, 197 bbl., 5/32-in. choke, perf. casing 7,730-70 ft., T.D. 7,800 ft.

Rapides Parish

Cheneyville field: Amerada 17 Well, 185 bbl., 7/8-in. choke, perf. casing 5,707-19 ft., T.D. 5,721 ft.

LOUISIANA GULF COAST DRILLING REPORT

Assumption Parish

Shell 1 State, Grassy Lake area, 11-15s-13e, drilling shale 10,383 ft.

Texas 1 State-Delacroix, 34-15s-14e, rigging up.

Calcasieu Parish

Gulf 1 Calcasieu National Bank, Hayes prospect, 18-11s-5w, rigging up.

Lisbon-Iberia Oil Co. 1 Edgewood Land & Logging Co., Perkins field, rigging up.

Iberia Parish

Gulf 1 Petit Anse Co., Avery Island salt dome, 59-13s-6e, drilling shale 2,400 ft.

St. James Parish

Shell 1 Schexnayder Community, La Pice field, T.D. 7,687 ft., fishing.

St. Martin Parish

Shell 3 Iberville Land Co., Happytown field, drilling sand 6,079 ft.

Eastern Texas Fields

(Continued from Page 66)

Ed Pace, trustee, 7 Tripp Elder, 20 bbl. in 48 min., 3,545-68 ft.

Ed Pace 11 Tripp Elder, 21 bbl. an hour, 3,538-58 ft.

Ed Pace 14 Tripp Elder, 22 bbl. in 55 min., 3,540-68 ft.

Ed Pace 16 Tripp Elder, 21 bbl. in 45 min., 3,545-62 ft.

Shell 30 E. W. Willoughby, 30 bbl. in 30 min., 3,543-3,600 ft.

M. E. Trapp 7 King-Johnson, 40 bbl. an hour, 3,547-81 ft.

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BRIDGEPORT CONNECTICUT

Rusk County

Kilgore area: Eula Oil 4 Mayfield, 3 bbl. an hour, pumping, 3,730-60 ft.

Joiner area: Aston-Greenway 14 Alford, 16 bbl. an hour, 3,585-3,613 ft.

Upshur County

Longview area: R. Lacey 26 Victory, 40 bbl. an hour, 3,650-68 ft.

EASTERN TEXAS WILDCAT REPORT

Anderson County

R. H. & W. Oil 1 Saunders, 17-acre tract in Joseph Ferguson Sur., in Frankston townsite, 5,000-ft. test, T.D. 4,960 ft. in sub-Clarksville sand, prep. to set casing and drill to Woodbine.

Texas 1 Greenwood, M. Salisar Sur., 4 mi. NW Palestine, drilling 900 ft.

Fannin County

Damon Oil 1 A. L. Chaffin, SW cor. 85-acre tract, J. Ketcham Sur., 4 mi. NE Bonham, location cleared, prepare move in materials.

Freestone County

C. W. Killough and E. B. Germany 1 Woolens, J. Ryan Sur., 9 mi. N Fairfield, S.D. for orders 1,812 ft.

Hill County

Rush & Sanders 1 Hutchinson, L. W. Williams Sur., 2 mi. SW of Mt. Calm, S.D. 570 ft.

Hopkins County

L. A. Rankin 1 Chapman, Francis Hopkins Sur., base massive 5,160 ft., T.D. 5,742 ft., water, show oil.

Kaufman County

T. G. Shaw, trustee, 1 Agnes Wynne, B. S. Newman Sur., 8 mi. E of Kaufman, lower Trinity test, S.D. for high water, 6,454 ft.

Lamar County

T. M. Parmly 1 C. H. Townsend, J. S. Porter Sur., 1½ mi. N of Chicolo, S.D. 1,612 ft.

McLennan County

E. P. Campbell 1 Stewart, S. Burton Sur., 5 mi. N of Waco, S.D. 712 ft.

Limestone County

Farrell Drlg. and Gulf Oil 1 F. Bevill, J. H. Murray Sur., 1 mi. SW of Horn, Travis Peak 4,892 ft., squeezed off perf., prep. drill ahead, 5,500 ft. new contract depth.

Hardin & Ames 1 Hammond, J. Folk Sur., 1½ mi. NW of Kosse, Glen Rose 4,290 ft., perf. casing in gas zone 5,805-10 ft. and 5,776-92 ft., bailed acid water and show oil, S.D. 5,955 ft.

Navarro County

J. R. Bunn 2 Cheney, J. White Sur., 3 mi. SE Navarro, rigging up.

Hargrave Oil 1 C. S. West, M. Boren Sur., 1½ mi. S Richland, T.D. 3,049 ft., show oil and salt water.

Rains County

Plains Prod. 1 W. D. Foster, T. Cummings Sur., 1 mi. NW Alba, top Georgetown lime 2,484 ft., drilling 2,795 ft.

Red River County

J. F. Morrissey 1 Tyler, James Miro Sur., 3½ mi. SE of Bogota, 5,000-ft. test, S.D. 2,910 ft., top sub-Clarksville 1,595 ft., Woodbine 1,960 ft.

Rusk County

Shell 1 Markey, A. Nolen Sur., 4 mi. SW Mt. Enterprise, location.

Smith County

O. L. Ross 1 Dr. Willingham, J. Herrin Sur., 2 mi. E Whitehouse, 10-in. at 110 ft., prepare to drill ahead.

Trinity County

R. W. Burnett 1 Southern Pine Lumber Co., G. Ricardo Sur., 2 mi. N Apple Springs, derrick up.

R. W. Burnett 1 Trinity Lumber C., J. Hanley Sur., 1 mi. W Groveton, S.D. 1,713 ft.

Wood County

Delta Drlg. Co. and Sells Pet. 1 Beckham, G. W. Cowan Sur., 4½ mi. NE of Mineola, S.D. 1,448 ft., to clear titles.

Hollandsworth Drilling Co. 1 Robin, George Brewer Sur., Lots 16 and 17, in Hawkins townsite, Reese Addition, top Navarro 2,211 ft., Nacatoch 2,304 ft., Pecan Gap 3,063 ft., Austin chalk 4,095 ft., Woodbine 4,398 ft., gas sand 4,469 ft., oil sand 4,568 ft., drilling 4,595 ft.

Hollandsworth and C. W. Johnson 1 Lynch, Lots 18 and 19 in Hawkins townsite, 200 ft. W of No. 1 Robbin, building derrick.

Hollandsworth 1 Bryan, C. M. Patton Sur., 1½ mi. W Hawkins, 467 ft. from N and E lines of survey, location.

W. L. Goldston 1 Osborne, H. S. Cobb Sur., 1 mi. SE Hawkins, 330 ft. from N and E lines of survey, drilling 50 ft.

Roger Lacey 1 Beck, Brewer Sur., in Hawkins townsite, E offset to Rotondi discovery well, moving in material.

E. C. Johnson 1 J. M. Green, John P. Mosely Sur., 3 mi. NE of Hawkins townsite, SW cor. of E 80 acres of the 160-acre tract, building derrick.

EAST CENTRAL TEXAS COMPLETIONS

Anderson County

Long Lake field: S. P. Killingsworth 1 Hull, 75 bbl., 7/64-in. choke, 5,243-62 ft.

Tide Water-Seaboard 1 Martin, 67 bbl. oil and 115,000,000 cu. ft. gas, 4,309-12 ft. and 5,258-74 ft.

Franklin County

Talco field: Magnolia 2 Rutherford, 70 bbl. in 6 hr., flowing, 4,253-70 ft.

Limestone County

Wortham field: McNeil Pet. 1 Mallard, dry at 3,012 ft.

McLennan County

Wildcat: H. Lewis 1 W. C. Hander, C. Farnah Sur., 2 mi. W of Waco, top Glen Rose 610 ft., dry 620 ft.

Navarro County

Wildcat: Coker, Hughey (formerly A. J. Willis) 1 Edens, E. Frier Sur., 4 mi. S of Corsicana, dry at 1,465 ft.

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BURGESS SNUBBERS

By

T. R. INGRAM

Maverick Springs Production Ordered by Government

DENVER, Colo., Jan. 13.—The Maverick Springs field in Fremont County, Wyoming, which has been shut in for 18 years after developing several million barrels of heavy crude reserves, is gradually being opened through the distribution of Indian leases held by the majors. Mountain Fuel Supply is preparing to test the southeastern flank of Powder Wash structure in Moffat County, Colorado. Continental 2 Northern Pacific, Frannie field, made 300 bbl. a day from the Tensleep on the pump. Texas 6 Purdy, Cut Bank field, swabbed 100 bbl. initial, and Glacier Production 3 Lookhoff was a small well. Kevin-Sunburst had three completions, S. T. Scotland 4 McNamara for 25 bbl., Aikens & Johnson 1 Monson for 3 bbl., and Twinfields 3 Thompson for 35 bbl. The Ambrosia Investors Co., Inc., 1 Government, in McKinley County, New Mexico, was off structure and abandoned.

SUMMARY OF COMPLETIONS

	No.	Prod.	Footage
Wyoming			
Oil wells	1	300	3,659
Montana			
Oil wells	5	188	11,020
Northwest New Mexico			
Dry holes	1	.....	1,700

COLORADO

Boulder County

Bartson Oil 1 Chenburg.....SW SW SE 15-2n-70w
Drilling below 80 ft.
J. A. Warren 3 Maxwell.....NW NE NW 24-1n-71w
Drilling 1,020 ft., near top objective Muddy sand.

Fremont County

U-Tex Oil 1 Hassler.....NE 28-20s-69w
T.D. 2,965 ft., testing, est. 40 bbl. per day.

Huerfano County

Tomkins & Son 1 Two Pines.....SE SE 31-28s-69w
T.D. 365 ft., showing for 10 bbl. a day.

La Plata County

Nick Spatter 1-X Bryce.....SW SW 31-33n-9w
Drilling below 4,400 ft.

Larimer County

E. P. Gallup 1 Hanson.....C SE NW 36-10n-71w
Drilling below 500 ft.

Logan County

West Plains 1 Sheldon.....SE NW SW 3-10n-55w
Drilling 3,400 ft. in shale.

Moffat County

Mountain Fuel Supply Co. is moving in rotary for an important test on the Powder Wash structure, northern Moffat County, in its 2-A Musser, NW SE 4-11n-97w. Location is a mile southeast of 1 Musser, completed in April 1931, at 2,152 ft. for 34,188,000 cu. ft. of gas a day, the discovery well. Two oil wells and one gas well subsequently were completed to the north and northwest of the discovery, but no wells have been drilled to the southeast. The discovery was completed in the upper Wasatch of Tertiary age, the structurally highest producing horizon in the Rocky Mountain area.

Mountain Fuel Supply 2-A Musser.....
CWL NW SE 4-11n-97w
Moving in, first report.

Park County

South Park Oil 1 Lamar.....NE NE SE 34-11s-75w
Drilling 7,672 ft. in sand.

Rio Blanco County

Texas-California 5 Unit.....NW NE NE 34-3n-94w
Drilling 5,764 ft.

Routt County

Mid-Colorado Pet. 1 Omholt.....NE NE SE 29-4n-87w
T.D. 3,160 ft., 2,600 ft. water in hole, preparing to test oil show at 3,135 ft.

WYOMING

Big Horn County

McDonald & Curtis 1 Orchard....SE NW 24-51n-93w
Drilling 1,465 ft., deep test, Torchlight field.

Carbon County

Sinclair-Wyoming 19 Wertz.....SE SW SW 6-26n-89w
Cellar.
Sinclair-Wyoming 20 Wertz.....NE SW NE 7-26n-89w
Cellar.
Robinson & O'Donnell 1 State SW SW NE 16-26n-89w
Drilling 1,500 ft., cemented 13⅜-in. at 290 ft.
Sinclair-Wyoming 2-A Mahoney C SW NE 34-26n-88w
T.D. 4,520 ft., cleaning out at 4,500 ft.
Sinclair-Wyoming 16-A Wertz..SW SW SW 6-26n-89w
Drilling 6,174 ft. in Tensleep.
Ohio 2 Lundy.....SE NE NW 34-20n-78w
T.D. 4,210 ft. in Dakota sand, cementing 7-in. at 4,182 ft., water in Dakota, P.B. to 4,096 ft., perf. with 48 holes at 4,025-50 ft., testing.

Crook County

Vickers-Continental 1 Duncan-Loban.....
NE NW SW 28-57n-64w
Resumed at 2,211 ft., drilling 2,260 ft.

Fremont County

Owners of leases from the Arapahoe and Shoshone Indian tribes in the Maverick Springs district in Fremont County, are working on plans to bring the field into production to comply with a recent ruling of the Department of the Interior that the wells must be produced or a high compensating royalty paid to the Indians. The field was drilled 18 to 20 years ago, 32 wells having been put down to the Embar-Tensleep and proving up around 1,400 acres. Reserves are estimated at 6,000,000 to 8,000,000 bbl. The oil, however, is very heavy, the field remote from railroad facilities, and the market is limited. The 20-year leases began expiring last year and hearings were conducted in Wyoming and Washington on renewal applications. The department agreed to renewals if the operators would pay a compensating royalty or produce a specified number of barrels per acre per year on which the Indians would receive royalties. On account of market conditions and the heavy expenditures which would be involved in constructing a pipe line, the owners of leases were reluctant to pay royalties on oil not produced or go to the expense necessary to market the oil on a large scale. As a result, some of them have been making deals with other interests to turn their acreage over to them in an effort to comply with the Washington requirements.

Val Kirk and Carroll Kirk, of Frannie, have taken over the leases held by Stanolind Oil & Gas Co., formerly Midwest Refining, in the SE of 22-6n-2w and S½ Section 23 and have begun producing some of the old wells, moving the oil to the railroad in trucks. The Indian Oil Co., in which H. O. Batzer, Knox Patterson, and others connected with the Husky Refining Co., took over the Ohio Oil Co. leases in the NE Section 27 and NW Section 26 and have been shipping oil by truck to Ogden, Utah, for several months. William Hardendorf and C. R. Ross, of Billings, acquired the Texas Co. lease in Section 22 and now have three wells on production making 500 bbl. a day. One of these was acidized recently and responded favorably, making 150 bbl. a day. Some of this oil is being trucked to Riverton where it is being run through the Riverton refinery and the road oil shipped to the Western Oil & Fuel Co. at Minneapolis. No deal has yet been reported on the Continental Oil and Union Oil of California leases in Sections 9, 10, 14, and 15. The railroads recently put in lower rates from Riverton to the East to help move the oil and it is believed that through cooperative action a fair margin of profit can be realized by the producers.

Niobrara County

Argo Oil 15 Elliott.....NW NE SW 5-35n-65w
Drilling 320 ft., first report.
Ohio 18 Putnam.....NE NW NW 4-35n-65w
Rig.
Western Petroleum 1 Mosier.....SW SW 31-35n-64w
Building rig.
Ohio 9 Agnes Rohlff.....SE NE SE 32-36n-65w
Drilling 3,700 ft.
Minnelusa Oil Corp. 4 Jose.....SW NE SW 6-35n-65w
T.D. 5,320 ft. in Leo sand, prepare to acidize.

Park County

Continental 2 Northern Pacific, NE NW NW 23-58n-98w, Frannie field, was completed at 3,659 ft., total depth, from the Tensleep, top at 3,580 ft. It was given a rating of 300 bbl. a day on the pump. It is on the north side of the field in territory recently proved by the company's 1 Prigge on the Montana side.

Resolute 2 State.....SW SW 16-57n-101w
T.D. 10,121 ft., set whipstock at 7,393 ft., and after redrilling to 7,408 ft., preparing to reset whipstock.

Platte County

Dividend O. & R. 1 Johnson.....NW SW 17-24n-66w
S.D. 3,814 ft. for casing.

Sublette County

Klumpe Syndicate 1.....NE SW NE 28-27n-113w
Spudded to 80 ft., set casing and S.D.
Texas 1-C Government.....SW NW NW 24-27n-113w
Location.
Texas 1-J Government.....NW SW SW 27-27n-114w
Coring 985 ft.
Marvel Oil 6 Government....CEL SE SE 28-27n-113w
Rigging up.
North La Barge Oil 6 Govt. CNL SE NE 28-27n-113w
T.D. 1,120 ft., prepare to test.

Sweetwater County

Sinclair-Wyoming 95-A.....SW NW NW 11-26n-90w
Drilling 180 ft.
Rocky Mountain Drlg. 1 State SW SW SW 36-20n-104w
Top Sundance 3,574 ft., prepare to test.
Sinclair-Wyoming 97-A.....NW NW SW 11-26n-90w
Drilling 980 ft.

Uinta County

Meridian Oil 2 Pat.....NW NW NE 26-13n-119w
T.D. 1,015 ft., trying to shut off water with 6¼-in. and test show oil at 1,012 ft.

MONTANA

Cascade County

Bushford Pet. Synd. 1 Shannon-Roberts.....
C SW NE 12-20n-1e
Drilling 3,190 ft., Vaughn district.

Daniels County

Copan O. & G. 2 Wiley.....NW NW NW 10-36n-50e
T.D. 1,928 ft., ready to resume drilling with rotary.

Glacier County

Texas 6 Purdy, NW SW SE 35-35n-6w, Cut Bank field, swabbed 100 bbl. first 24 hours at 2,884 ft., total depth, from the Cut Bank sand at 2,800-77 ft. There was a shale break at 2,862-68 ft., with the main pay at 2,868-77 ft.

Glacier Production 3 Lookhoff, NW NE NE 33-33n-5w, had 600 ft. of fluid in the hole at 2,952 ft., total depth, but was not given a swabbing test. The Cut Bank sand was at 2,905-47 ft. with the main pay at 2,945-47 ft.

Glacier Prod. 9 State.....CWL SW 16-33n-5w
Drilling 225 ft., first report.
Glacier Prod. 4 O'Brien.....C S½ SW 32-34n-5w
Spudding 315 ft., first report.
Ed Reagan 1 Tribal-194.....CEL SE NE 22-37n-7w
Spudded.
Kately, agent, 1 Hagerty.....SE NE NW 15-34n-6w
Cemented 10¾-in. at 595 ft., top Colorado 565 ft.
Texas 1 Lander.....C SE NE 20-35n-6w
Cemented 10¾-in. at 450 ft.
Texas 2 Aronson.....C NW SW 21-35n-6w
Drilling 1,923 ft., 10¾-in. at400 ft., top Colorado 695 ft.
A. P. Consolidated 5 Keisel.....SE SE NW 11-34n-6w
Cemented 10¾-in. 534 ft., top Colorado 505 ft.
Frank Henderson 1 Tribal-190 NW NW NW 29-32n-5w
Rig.
A. B. Cobb 7 Farmers State Bank NE NE SE 17-33n-5w
Drilling 1,170 ft., top Colorado 550 ft., 10¾-in. at 562 ft.
Consolidated Gas 1 Frary-Tribal NW NW SE 19-32n-5w
T.D. 650 ft., underreaming 10¾-in. at 550 ft.

Hill County

Yale Oil Corp. and A. B. Cobb have joined with W. M. Hanlon in test to the Madison lime at 3,800 ft. on the Signal Butte structure, where these interests have a block of 36,000 acres. Hanlon 1 Government, C SW NE 19-37n-15e, spudded and shut down last September. He will retain half of the acreage in his block and Yale and Cobb will drill the well. A rotary is being moved in.

Toole County

S. T. Scotland 4 McNamar, CNL NE SW 29-35n-3w, Kevin-Sunburst field, pumped 25 bbl. of oil and 7 bbl. of water per day from the contact at 1,776-79 ft. after acidizing with 1,000 gal.

Aikens & Johnson 1 Monson, C SW SW 14-34n-1w,

pumped 2½ bbl. a day from the Burwash sand at 1,630-60 ft., which also is the total depth.

Twinfields Oil 3 Thompson, NW NW SE 28-35n-3w, is pumping 35 bbl. of oil and 10 bbl. of water per day at 1,745 ft. after plugging back from 1,760 ft. and acidizing with 500 gal. The contact at 1,713 ft. was dry. Oil is from a break in the lime at 1,736-42 ft.

Big West Oil 9 Allen ..... CEL SE SW 31-35n-1w
T.D. 1,330 ft., small show gas in Sunburst sand at 1,185-1,205 ft., running 5⅛ in.

Kevin Oil 4 Leach ..... C SE NE 31-35n-3w
T.D. 1,669 ft., cemented 7-in.

A. A. Welch 2 Lerum ..... SE SW NW 25-36n-2w
T.D. 1,658 ft., contact 1,641-58 ft.

NORTHWEST NEW MEXICO

Bernalillo County

David H. Boyd 1 Wright 11-10n-5e
Spudded.

McKinley County

Ambrosia Investors Co., Inc., 1 Government, SE SE 11-14n-10w, Ambrosia Lakes district, was abandoned at 1,700 ft., found to be off structure. Rig probably will be skidded to new location.

San Miguel County

Southwest Drilling, Inc., 1 Conchas NW NE 34-17n-21e
Recementing 8¾-in. at 2,635 ft.

Torrance County

Orville J. Lee 1 Milburn ..... C NW SW 36-7n-7e
Rigging up.

J. P. Stewart 1 Laman ..... C NW NE 3-3n-12e
Drilling 710 ft.

UTAH

Box Elder County

Northern Oil 1 ..... NE SW 17-13n-4w
Resumed at 386 ft. and drilling ahead at 475 ft.

Summit County

Longwell Pet. Co. 1 ..... SE SW SE 35-3n-5e
S.D. 3,525 ft. for drilling line after setting 4½-in. at 3,492 ft.

California Fields

(Continued from Page 76)

at present the largest dry gas field is located in the Rio Vista district of Solano and Sacramento counties in the north central part of the state. Rio Vista is by far the largest and most productive gas field and probably contains more than all of the other gas fields combined. Several gas fields are still undeveloped and for this reason their true productivity is undetermined. This includes the Willows gas field, Potrero Hills gas field and the Eureka gas field.

COASTAL DISTRICT

The coastal area was relatively quiet this week although five derricks in the Orcutt and Purisima districts were blown down by a strong wind late in the week. This section of the state escaped the high-velocity wind that visited the southern end of the San Joaquin Basin where about 100 derricks were blown down in the Edison, Kern River and Kern Front fields and which resulted in one fatality due to electrocution. Practically all derricks blown down were of wood construction and were for the most part pumping rigs that had been standing for a number of years. Many of the wells affected will lose several days production before being put back on the beam as in some cases the wells are being pumped with electricity. Tide Water Associated Oil Co. appeared to be the heaviest single loser as this company lost about 50 derricks at Kern River and in the Mount Poso field.

Operators are beginning to get started in the Newhall-Castaic region where R. E. Havenstrite discovered a new highly productive oil field a few months ago and from present indications 10 additional wildcats will get under way within the next 30 days. Practically all of this acreage has been under lease for several months and is now drawing rentals. Universal Consolidated Oil Co. has staked tentative location for 1 Dennis southeast of Havenstrite 2 Lincoln on the Del Valle anticline and an early spud is anticipated. Universal has a lease on 30 acres that forms an oblong block of land about 300 ft. in width and 2,000 ft. long. It is an irregular shaped parcel and hence the company has several locations available for work. The location tentatively selected is the closest to production and for this reason it is quite likely that this site will be finally approved. Up in Oak Canyon Western Gulf Oil Co. has resumed drilling operations on 1 Lechler in 31-5n-17w following the landing of surface casing at 350 ft. Newhall-Potrero Oil Co. which suspended work on 1 Ferguson a few months ago at 8,000 ft. in 26-4n-17w has decided to resume drilling and will have a crew on hand within the next few days. Rains during the past week have slowed up work but the roads are again in good condition.

COASTAL DISTRICT COMPLETIONS

Newhall-Potrero Field

Barnsdall 15 R.S.F. 26-4n-17w
Flowed 1,225 bbl., 33.8-gravity, 0.2 per cent cut, 760,000 cu. ft. gas. 30/64-in. bean. Pressures 325/950 lb. Elev. 1,199 ft. T.D. 7,423 ft. 7-in. water string 7,152 ft. 304 ft. 5½-in. liner 7,421 ft. Perf. 7,200-7,421 ft. 7,394 ft. 2½-in. tubing. Completed in second R.S.F. zone. 75 days drilling time. Los Angeles County.

Rincon Field

C. C. M. O. Co. 39-B Hobson 16-3n-24w
Flowed 435 bbl., 30.1-gravity, 4.3 per cent cut, 193,000 cu. ft. gas. 28/64-in. bean. Pressures 180/200 lb. Elev. 651 ft. T.D. 5,132 ft. Bridge 4,901 ft. 7-in. combination string 5,115 ft. Perf. 4,495,-4,550 ft., 4,640-4,870 ft. 4,476 ft. 2½-in. tubing, with packer 4,444 ft. Completed in Hobson zone. 29 days drilling time. Ventura County.

San Miguelito Field

Continental 20 Grubb 23-3n-24w
Flowed 1,510 bbl., 28.2-gravity, 6.2 per cent cut, 1,310,000 cu. ft. gas. 128/64-in. bean. Pressures 175/700 lb. Elev. 271 ft. T.D. 6,895 ft. 7-in. water string 6,150 ft. 843 ft. 4¾-in. liner 6,894 ft. Perf. at intervals. 6,580 ft. 2½-in. tubing. Completed in Grubb zone which may be equivalent or same as some productive interval in Ventura Avenue field to the east. Productive limits in intervening area still open. 44 days drilling time. Ventura County.

Santa Maria Valley Field

Union 6 Le Roy 14-10n-35w
Pumped 125 bbl., 17.2-gravity, 3.4 per cent cut. Elev. 113 ft. T.D. 5,306 ft. P.B. 5,045 ft. 5½-in. combination string 5,295 ft. Perf. 4,925-5,295 ft. 4,991 ft. 2½-in. tubing. Bottomed in gray water sand at 5,306 ft. Water effectively excluded at plugged depth 5,045 ft. 29 days drilling time. Santa Barbara County.

Union 3 Morrison 27-10n-34w
Pumped 760 bbl., 13.7-gravity, 11.5 per cent cut. Elev. 253 ft. T.D. 5,125 ft. P.B. 5,117 ft. 5¾-in. combination string 5,117 ft. Perf. open to production 3,831-5,117 ft. 5,091 ft. 2½-in. tubing. Swabbed 2 days but would not flow. 19 days drilling time. Santa Barbara County.

Ventura Avenue Field

Associated 20 McGonigle 23-3n-23w
Flowed 1,395 bbl., 32.9-gravity, 0.8 per cent cut, 1,618,000 cu. ft. gas. 128/64-in. bean. Pressures with 12/64-in. bean 625/1,800 lb. Elev. 596 ft. T.D. 8,210 ft. 7-in. water string 8,045 ft. 212 ft. 5-in. liner landed 8,205 ft. Perf. 8,053-8,205 ft. 7,950 ft. 2½-in. tubing. Completed in 57 zone. Bottomed in oil sand. 88 days drilling time. Ventura County.

COASTAL DISTRICT WILDCATS

De Valle District

Universal Consolidated Oil Co. 1 Dennis ... 21-4n-17w
Tentative location 243 S and 29 W from NE cor. 21-4n-17w. This location is southeast of Havenstrite 2 Lincoln. Los Angeles County.

PATTERSON-BALLAGH

PROTECTORS AVERAGING

MORE THAN 5 WELLS

(10,000 FOOTERS)

In a study of a group of very deep wells in the Gulf area, 83 wells drilled to a total of 962,000 feet (including whipstocking footage) Patterson-Ballagh Protectors averaged more than 5 wells per string. The cost was considerably less than 4c per foot of drilling. There was not a single case of casing trouble, no water leaks, not a single fishing job in the casing, nor any instance of a "washout" in the casing. These are not wells selected because of their trouble-free record, but the deep wells in this district from which records could be obtained. Only one is less than 10,000 feet. Most of them are 13,000 feet deep. It's *Economy Insurance* to use these Protectors.

See 1941 Composite Catalog.

PATTERSON-BALLAGH

CORPORATION

Los Angeles — Houston — New York City

Commercial Production Found In Third Steveville Test

By VICTOR LAURISTON

CHATHAM, Ont., Jan. 13.—In the Steveville field, in southern Alberta about 110 miles east of Calgary, Standard of British Columbia 1 Princess, LSD 3, 13-20-12w4, is rated a commercial producer from the top of the Madison limestone between 3,225 and 3,325 ft. Originally drilled to 4,250 ft. for a test of the Devonian limestone, the well got sulfur water between 3,960 and 4,027 ft. and was plugged back to 3,325 ft. and cased to the top of the Madison. Tests of the 100 ft. of open hole in the lime at first looked like failures, but eventually the well started to flow 25-gravity crude at a rate of 7 to 8 bbl. an hour, accompanied by a gas flow of about 5,000 ft. a day. At last reports production was holding up at this rate with 75 lb. back pressure. No water had developed. Production was run into a sump till storage tanks could be procured. The well will be acidized later.

This is the third well drilled by Standard of British Columbia in the Steveville field. The company entered Alberta in 1938, with John Galloway in charge of operations. Standard 1 Princess, LSD 13, 22-20-12w4, about 2 miles northwest of the new producer, was drilled to 6,155 ft. and got a large gas flow with noncommercial oil showings. It is shut in. Standard 2 Tide Lake, LSD 9, 19-18-9w4, 16 miles south of No. 1, was abandoned at 4,200 ft. The field has also been tested by Anglo-Canadian Oil Co. with three wells, of which two were gassers; and by Anaconda Oil Co. 1, LSD 15, 9-22-12w4, now standing at 3,732 ft. Standard holds extensive acreage, and Anglo-Canadian Oil Co. holds some 60,000 acres. The new producer is 11 miles south and 3½ miles east of Steveville and 8½ miles south and 16½ miles east of Brooks.

North Turner Valley: Home Oil 1, LSD 8, 33-20-3w5, finished at 8,010 ft., 808 ft. in the lime, acidizing and testing. Home 6, LSD 8, 28-20-3w5, is finishing in the black lime below 8,400 ft.

West-Central field: Royalite 54, LSD 1, 7-19-2w5, is finishing below 7,425 ft. after getting the lime at 6,936 ft.

Southwest field: Commoil 4, LSD 9, 29-18-2w5, finished at 7,308 ft., 441 ft. in the lime, is acidizing and testing, and looks like a 300-bbl. producer.

North Turner Valley: Ace Royalties 1, LSD 5, 4-21-3w5, spudding with rotary outfit from Commoil 4.

Clearwater structure: Ram River Oils 2, 1-37-11w4, below 2,072 ft., with gas shows 1,900-80 ft.

Moose dome: McColl-Frontenac 1, LSD 9, 6-23-6w5, below 2,506 ft.

Sarcee Reserve: Inland-Sarcee 1, LSD 2, 4-23-4w5, below 610 ft.

Lethbridge Gas Show

West of Lethbridge, in the border area, Lethbridge Petroleums 1, LSD 12, 11-8-22w4, is deepening from 3,320 ft., after installing high-pressure fittings. The drill entered the upper Blairmore formation at 3,320 ft. after encountering gas sands at 3,225-50 and 3,265-85 ft., with flow estimated at 1,250,000 cu. ft. a day. Drilling will be continued to test the Madison lime, expected around 4,100 ft.

Taber field: Plains Petroleum 2, inactive for more than a year, has been cleaned out and put on the pump, making around 45 bbl. a day of medium crude with some water. After producing 500 bbl. it was shut in waiting for additional storage. Later, hole will be deepened.

Lethbridge structure: Lethbridge Petroleums 1, LSD 12, 11-8-22w4, is deepening to the lime from 3,320 ft., running on its own gas, after encountering a flow of 1,000,00 ft. in two sands, with traces of oil.

Blood Reserve: Northwest-West Petroleums 1, LSD 3, 20-5-23w4, is below 6,099 ft. with the Madison expected around 6,150 ft.

Saskatchewan Operations

Preliminary work by Norcanols Oil & Gas, Ltd., in southeastern Saskatchewan under agreement with the provincial government is already well advanced and data secured in 1940 by gravity meter, geological reconnaissance and seismographic survey are now being studied in planning the actual development campaign. Core drilling will be continued through the winter. The area under development lies south of the C.P.R. main line and extends diagonally in a southeastern direction to the United States boundary, representing a strip of territory west of the Soo line with Avonlea as its most northerly point and includes some 1,800 sq. miles within Townships 1 to 12, Ranges 12 to 23 west of the second meridian. It includes both provincial acreage and freehold rights. Agreement with the provincial government calls for exhaustive survey of the entire area, the results to be made freely available to the Department of Natural Resources. If oil and gas structures are discovered, the company has the right to lease certain acreage from crown lands; following which the crown lands and the company's freehold lands are to be unitized with the government receiving a proportionate royalty. The agreement calls for expenditure of at

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West Central Texas Fields

(Continued from Page 85)

southeast of Lawn in the extreme southeast part of Taylor County. Rhodes Drilling Co. of Abilene is preparing to move in rig to start at once. Shell assigned six 80-acre checkerboarded tracts, including the distillate, to the operators and Rhodes Drilling Co. will receive 360 acres toward the contract for drilling. It will be 1 John Windham and G. O. Creswell, 467 ft. from the SE cor. SW Section 381, George Hancock Survey, 5 miles north of the Goldsboro field in northwestern Coleman County. It is contracted to the Gardner sand of Strawn series which produces in the Goldsboro field.

WEST CENTRAL TEXAS COMPLETIONS

(24-hour gages)

Brown County

Brooksmith gas field: Austin Brown 1 Finch, top Caddo 945 ft., Ranger 1,416 ft., Ellenburger 1,650 ft., completed for water well from 1,660-62 ft.

Coleman County

Santa Anna gas field: Anzac Oil 1 Gay, top Caddo 1,706 ft., 3,970,000 cu. ft. gas, 2,000 gal. acid, 2,258-68 ft.
Echo field: Anzac Oil 8-C Morris, 344 bbl., open tubing, 30-qt. shot, 2,167-2,201 ft.

Jones County

Wildcat: G. M. Gillespie 1 King, NW Sec. 53, O.A.L. Sur., dry at 2,615 ft.
Pearson 1 Carlson, W½ N½ Sec. 1, Blk. 5, H.&T.C. Sur., dry at 3,501 ft.
C. W. and W. L. Snoody 1 Jackson, 3,400 ft. from S and 330 ft. from E lines, J. McGrew Sur. 245, dry at 2,472 ft.
Lewis field: Falls Ref. 5 W. D. Robinson, 20 bbl., pumping, 4,000 gal. acid, 1,872-77 ft.
Sayles field: Johnson and Ungren & Frazier 1 Sayles, Jr., 212 bbl., flowing through open tubing, 1,925-43 ft.
Triplett field: T. D. Humphries 1 Rust, 207 bbl., flowing through open tubing, 2,465-70 ft.

Shackelford County

Newell field: Dean Brothers and Roberts 2-K Newell, top Palo Pinto 2,918 ft., dry at 3,001 ft.
Fortex Oil 2 Newell, dry at 1,202 ft.
Cook field: Roeser-Pendleton 1-A-118 Cook, 25 bbl., pumping, 1,368-75 ft.

WEST CENTRAL TEXAS WILDCAT REPORT

Brown County

A. J. Stokes 1 B. S. Bayston, 210 ft. from SE line and 2,962 ft. from SW line of Prosper Mangel Sur. 604, drilling 1,470 ft.

Callahan County

A. P. Heinze, 1 J. Kincaid, 467 ft. from N and W lines of E½ SW Sec. 41, B.B.B.&C. Sur., 3,800-ft. test, location.
Rhodes Drilling Co. 1 N. M. George, NW Sec. 75, O.A.L. Sur., 4 mi. E Baird, 2,700-ft. test, S.D. 2,641 ft.
W. D. Austin 1 I. N. Jackson, 150 ft. from N and W lines, Sec. 2, C.&M. Sur., S.D., casing 815 ft.
C. D. Hagerty 1 Windham, 990 ft. from N and 330 ft. from W lines, SE Sec. 154, G.H.&H. Sur., show oil 980-85 ft., S.D., but may deepen.
Reeves & Sorrell 1 Young, 1,980 ft. from N and 660 ft. from E lines, Sec. 37 ,B.B.B.&C. Sur., H.F.W. 1,975-2,000 ft., 6⅝-in. 2,000 ft., W.O.C.

Coleman County

L. J. Derrick 1 J. W. Vance, 330 ft. NW of old Texas 1 Vance, also in Sec. 101, E.R. Sur., 2,100-ft. test, location.
R. H. Murray 1 Morris, 467 ft. S and W of NE 160 ac. of J. Greenwood Sur. 304, drilling 1,365 ft.
M. R. Stuard 1 Minear, 330 ft. from N and 1,850 ft. from E lines of 360-ac. tract in E. Votaw Sur. 244, location.
Cooper Brothers 1 McClure, 1,100 ft. from S and 2,400 ft. from W lines of T. B. Frizzell Sur. 711, 2,800-ft. test, first report.

Comanche County

Campbell 1 Stark, SW part of Asa Hoxey Sur., S.D. repair 145 ft., will set 6⅝-in.
Natural Resources 1 Armor, Sec. 105, T.&N.O. Sur., 5 mi. NE of Eden, prepare to resume drilling at 1,565 ft., contract depth 3,250 ft., to Ellenburger lime, cleaned out to old T.D., prepare resume drilling, no report.

Concho County

Floyd C. Dodson 1 Robert Wilson, Thomas Green Sur., 10 mi. SW Eden, show oil and gas 3,792-95 ft., 3,819-20 ft., at 3,828-29 ft., showed 1 bailer water per hr., may drill deeper.

Eastland County

C. D. Lane 1 Mason, 900 ft. from N and 750 ft. from W lines of W½ NE Sec. 13, D.&D.A. Sur., drilling 944 ft.
W. M. Morris 1 Carrie Bryant, 1,520 ft. from N and 200 ft. from W lines of SE Sec. 20, Blk. 1, H.&T.C. Sur., 6⅝-in. 825 ft., prepare to drill ahead.
Hickok Oil 1 Luse & Gray, NE Sec. 486, S.P. Sur., Ordovician test, ¾ mi. SE of new McElreath field, 4,250-ft. test, drilling 1,240 ft.

Erath County

W. A. Young 1 J. B. Mills, J. Harvey Sur., 5 mi. NW of Dublin, T.D. 212 ft., cleaning out hole.

Fisher County

F. A. Stephenson 1 Maberry, SE SW Sec. 56, Blk. 1, H.T.&B. Sur., 3,400-ft. test, cored 3,285-3,302 ft., recovered sand showing oil, opened to flow 57 bbl. oil in 1 hr., later swabbed 93 bbl. oil in 10 hr., top Swastika 3,277 ft., 40-gravity oil.
General Crude Oil 12 Flanigan, center of old Royston field, Ordovician test, drill pipe froze at 5,499 ft., T.D., S.D.
F. A. Stephenson 1 Humphries, NW NW Sec. 49, Blk. 1, H.T.&B. Sur., 3,350-ft. test, first report.

Hamilton County

A. J. Caldwell 1 W. W. Jones, 1,002 ft. from NE, 150 ft. from SE lines, W. H. Crowder Sur., drilling past bit 3,002 ft.
C. J. Meyers 1 Oats, 420 ft. from S and 1,035 ft. from E lines, F. Hughes Sur., 4,000-ft. test, top Mississippian lime 3,827 ft., top Ellenburger 3,839 ft., flowing water into pits, no oil, still testing.
Falls Ref. Co. (formerly Wallace & Vickers) 2 Lund, C S½ of 20 acres of N½ of SW¼, R. J. Bailey Sur. 51, drilling 3,733 ft.
Gunther & Smith 1 Thompson, 467 ft. from SE and 4,533 ft. from SW lines of Rhody Kennedy Sur., spudded and S.D.
Hensley & Watson 1 Manning, 467 ft. from W and 2,500 ft. from S lines of Agapo Gaithan Sur., rotary on location.
Bob Waters 1 Oates, 3,350 ft. from SE and 8,450 ft. from NE lines of F. Hughes Sur., S.D. 350 ft., may change operators.

Jones County

Humble 2 Sears, 467 ft. from S and W lines of Sec. 37, Blk. 16, T.&P. Sur., top saturation in Swastika 3,010 ft., T.D. in oil sand at 3,020 ft., est. at 400 bbl. daily after 3-hr. flow.
Shaheen Oil 1 Young, 11,630 ft. from N and 300 ft. from E lines, S. Andrews Sur. 191, 2,500-ft. test, first report.
Danciger O. & R. 1 H. E. Gale, NE NE Subd. 91, De Witt C.S.L. Sur. 126, 2,500-ft. test, first report.
W. D. Brookover 1 A. N. Wimberly, SW SW Subd. 91, De Witt C.S.L. Sur., 2,500-ft. test, first report.
Fain-McGaha Oil 1 Moore, 660 ft. from NE and 1,320 ft. from SE of S 107 acres of J. D. Maltby Sur. 252, 2,500-ft. test, first report.

McCulloch County

W. J. Dillard 1 E. B. Garrett, 467 ft. from N and E lines of Sur. 934, Abst. 1196, 3,000-ft. test, location.
A. K. McCord 1 J. E. Nelson, 150 ft. from W and 1,546 ft. from S lines, Sec. 959, E. Gruene Sur., Abst. 957, first report.

Menard County

Harry Baldwin 1 Leggett, SW SW Sec. 1, B.S.&F. Sur., S.D. casing 1,040 ft.

Palo Pinto County

Cole & Davis 1 Rogers, 467 ft. from S and E lines, Sec. 894, T.E.&L. Sur., T.D. 1,002 ft., running 8¼-in. casing.
Georgian Oil 1 Weldon, A. J. Smith Sur., Abst. 383, S.D. 1,425 ft.
E. Guyer 1 Dalton, L. B. Dalton Sur., Abst. 153, show gas 3,827-53 ft., show oil and gas 3,879-81 ft., bailing live oil, some water coming in behind 8¼-in. casing at 1,930 ft., T.D. 3,881 ft. (corrected).
Elgin & Watson 1 Watson, NE NW Sec. 10, Blk. 2, T.&P. Sur., fishing bit 4,065 ft.
Hickok Prod. and Reynolds 1 J. R. Halsell, 467 ft. from S and W lines, Sec. 92, B.B.B.&C. Sur., Abst. 105, 5,500-ft. test, first report.

Shackelford County

Georgian Oil Corp. 2 Blach. 1,290 ft. from SE and 540 ft. from SW lines, Sec. 301, T.E.&L. Sur., deep test, spudded and S.D.
Choate 1 Green, 150 ft. from N and W lines of N½ SE Sec. 61, Blk. 12, T.&P. Sur., drilling 996 ft.
R. T. Nail 1 Cook, 150 ft. from N and W lines of SE SW Sec. 53, E.T. Sur., S.D. 300 ft.

Runnels County

A. J. Johnson 1 Bert Fletcher, E. W. Bull Sur. 333, 5,500-ft. test, S.D. 515 ft.

Taylor County

Ce-Beth Oil 1 City of Abilene, south shore of Lake Abilene on city property, 4,000-ft. test, running 10-in. casing 2,300 ft.

La Ward, Jackson County Well Testing in Frio

By NEIL WILLIAMS

HOUSTON, Tex., Jan. 13.—In the Mauritz area, Jackson County, Humble Oil & Refining Co. was preparing to test 1 A. A. Egg. This well topped the Vicksburg formation at 8,224 ft., and after drilling to a total depth of 8,258 ft. with no shows reported, 5½-in. casing was cemented at 5,323 ft. preparatory to testing the Frio sand where interesting showings of oil and gas were logged. The Frio section was topped at 5,178 ft. and sand and shale with showings of oil and gas was logged at intervals from 5,259-95 ft. The well is located in the B. J. White Survey about 6½ miles northeast of La Ward. Jackson County was one of the district's most active areas the past year as two new Frio sand pools were discovered, and important extensions and sand discoveries resulted in increased development in several proven fields. Two new wildcat operations were being started as material was being moved in for W. S. Boyle et al 1 Terrell in the William Murphy Survey, and L. A. Wagner was preparing to spud 1 Wilbeck in the T. H. P. Heard Survey, a projected 3,000-ft. test.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells	11	3,585	73,191
Dry holes: Fields	2	.....	8,300
Total	13	.....	81,491

W. R. Davis Co., Inc., 1 Brownston, reported the previous week as opening gas-distillate production from the Wilcox sand in the Garwood area, Colorado County, flowed 121 bbl. of fluid per day of which 50 per cent was distillate and the balance wash water. The well was tested for 10 hours through a 5/32-in. choke and for 14 hours through a ⅛-in. choke. Tubing pressure was 2,375 lb., and casing pressure 1,550 lb. The hole is bottomed at 10,012 ft. and the completion was made by perforating casing at 9,423-35 ft. Important geological markers were topped as follows: Discorbis Yeguaensis 5,865-75 ft., Ceratobulimina 6,390-6,420 ft., Bifarena 7,517-47 ft., Large Cyclamina 7,639-69 ft., and the Cibicides pseudo Wellerstorfi 9,109-15 ft. Location is on strike with the Sheridan field located in the same county, and the completion is expected to result in increased development for this particular sector of the trend.

Old Ocean Field

In the Old Ocean field, Brazoria County, a northeast extension of several hundred feet was indicated as sand and shale with showings of oil and gas was cored at intervals in Texas 1 Walker which is drilling in shale below 10,256 ft. Old Ocean is one of the district's most outstanding fields, and until the past few months all development had been done by Harrison & Abercrombie who control most of the acreage. However, production has extended outside the company's holdings, which has resulted in an increase in development. At the present time there are 11 operations reported all of which are projected to depths below 10,000 ft.

In the same county, and located about 2½ miles southwest of the Alta Loma field, Strake Petroleum Co., Inc. 1 Griffith is drilling in shale and lime below 9,030 ft. with no additional showings reported. The well was temporarily halted the previous week at 8,144 ft. due to an attempted blowout. Location for a new test was announced for the Anchor field by Glenn H. McCarthy. The well is 1 R. H. Carr located about 1,300 ft. southwest of the operator's 1 J. C. Carr, the discovery well.

Phillips 1 Houston Farm Development Co., 1 mile west of the discovery well of the Chocolate Bayou field, Brazoria County, continues to test, and on a recent gage the well flowed 103 bbl. of distillate in 12 hours through a ¼-in. choke. Tubing pressure was 3,150 lb., and casing pressure 3,200 lb. The well is testing the Frio sand through perforated casing at 9,675-77 ft.

Galveston Bay

Prospects of extending the Red Fish Reef field in Galveston County 1 mile southwest were not encouraging as Humble 7-A-264 State recovered salt water when tested through perforated casing at 9,211-26 ft. A slight amount of oil and salt water was recovered in a previous test at 9,127-32 ft. Approximately 1 mile northwest of the discovery well, the company's 8-A-223 State is drilling in sandy shale below 10,035 ft.

In the Caplen field, Galveston County, Sun Oil Co. has cemented casing for completion preparatory to testing 1-27 State, the first well to be drilled in the Gulf of Mexico which adjoins the field to the south. The hole is bottomed at 7,795 ft., and 7-in. casing was cemented at 6,207 ft. An electrical survey showed sand with an oil and gas show at 6,060-90 ft., 4,555-70 ft., and 2,950-60 ft. The well was drilled by directional methods.

Gulf Oil Corp. opened production from a new sand on the northeast flank of the Fannett dome, Jefferson County with the completion of 21 Thomas which flowed 215 bbl. per day through a ¼-in. choke from perforated casing at 5,570-90 ft. Superior Oil Co. staked location for its first test, 1 Phillips Bordages, a projected 9,000-ft. test located north of Gulf Oil Corp. development in the A. Mort Survey.

On the east flank of the Esperson field, Liberty County, W. P. Luse 4 Hlavaty is bottomed at 6,527 ft., and 5½-in. casing was cemented on bottom following an electrical survey which showed oil and gas sand at 6,459-6,511 ft. This is the fourth well to be opened in this area which is located north of the deep sand production on the southeast flank originally established by the General Crude Oil Co.

TEXAS GULF COAST COMPLETIONS

Brazoria County

Damond Mound field: Pan American 1 Kountz, dry, T.D. 6,499 ft.
West Columbia field: Texas 18 Phillips, 445 bbl., ¼-in. choke, top sand 5,735 ft., T.D. 5,756 ft.

Chambers County

Anahuac field: Gulf 13 Knowles, 568 bbl., ¼-in. choke, perf. casing 7,050-75 ft., T.D. 7,081 ft.
Humble 48 Middleton, 615 bbl., ¼-in. choke, top sand 7,194 ft., T.D. 7,227 ft.

Harris County

Humble field: Wilson Oil Co. 2 Brown, dry, T.D. 1,801 ft.
Tomball field: Humble 1-C Lamport, 415 bbl., ¾-in. choke, top sand 5,545 ft., T.D. 5,560 ft.

Jackson County

Lolita field: Magnolia 8 Mitchell, 165 bbl., 7/64-in. choke, T.D. 5,284 ft.
Magnolia 7 Mitchell, 121 bbl., 9/64-in. choke, T.D. 5,286 ft.

Jefferson County

Fannett field: Gulf 21 Thomas, 215 bbl., ¼-in. choke, perf. casing 5,570-90 ft., T.D. 6,566 ft.
Lovells Lake field: Humble 27 Broussard, 144 bbl., ⅛-in. choke, T.D. 7,794 ft.
Humble 18 Jefferson Land Co., 147 bbl., ⅛-in. choke, top sand 7,784 ft., T.D. 7,790 ft.

Liberty County

Hardin field: Magnolia 1 R. W. Humphrey, 83 bbl., 10/64-in. choke, top sand 7,641 ft., T.D. 7,647 ft.
Esperson field: General Crude 1 Grossman, 667 bbl., ¼-in. choke, top sand 7,065 ft., T.D. 7,150 ft.

La.-Ark. Fields

(Continued from Page 83)

Union Producing Co. 1-A Meadows.....NE 18-21-4
Drilling 10,651 ft.

La Salle Parish

Delta Drlg. Co. 1 Hughes.....NE NE SW 22-8-1e
Arranging to deepen 4,002 ft.
Harry Shulman et al 1 V. B. Whidden...SW NE 9-9n-3e
Set 10¾-in. casing 224 ft.
Hunter Co. 1 Pipes.....SW SE 18-8n-3e
T.D. 3,690 ft., sidetracking rotary slip.

Natchitoches Parish

J. E. Watts 1 Tanner.....SW SW NW 18-10-10
S.D. 3,240 ft.

Red River Parish

Thornton & LaCroix 1 Prudential Life Ins. Co.....
SW SW NW 31-11-9
T.D. 1,317 ft., pumped off, swabbing salt water.

Sabine Parish

Roy Raines 1 Carter.....SW NW NW 27-9-11
S.D. 2,236 ft.
J. E. Watts 1 Cook Land Co.....W½ SW NE 27-10-11
S.D. 3,435 ft.

Tensas Parish

H. L. Hunt 2 Ayers Lumber Co.....NW NE 18-14-11
10¾-in. casing 282 ft., drilling shale 2,420 ft.
Pope & Shields 1 Panola Co.....SE NW 34-13-12
Rigging up.

ARKANSAS

An oil odor was encountered in the Crow Drilling Co. 1 J. W. Smart, Stephens test projected to the Smackover lime. The well, located in Columbia County, cored brown gray shale with an odor of oil at 3,420-40 ft., but a drill-stem test at 3,415-40 ft. showed recovery of 2,600 ft. of salt water. The test is being drilled ahead.

The McKamie field of Lafayette County is seeing its first active development, with three new locations staked for early drilling. The field was discovered last June, but only three wells have been completed in the deep Smackover lime gas-condensate section.

AVERAGE DAILY PRODUCTION

NORTH LOUISIANA

	Jan. 11	Jan. 4
Caddo, light	5,900	5,965
Caddo, heavy	2,430	2,250
Cotton Valley	13,600	13,575
Cross Lake	2,830	3,590
De Soto	1,050	1,000
Haynesville	2,620	2,625
Homer	2,650	2,660
Lisbon	3,000	2,990
Oila	8,825	8,800
Rodessa	16,155	17,000
Sligo	2,465	1,415
Sugar Creek	1,110	945
Urania	2,250	2,280
Zwolle	1,360	1,375
Total North Louisiana	68,830	68,960
Rodessa, Texas	16,250	14,325

SOUTH ARKANSAS

Atlanta	2,425	2,415
Buckner	2,160	2,025
Champagnolle	1,165	1,170
Dorcheat	1,350	1,325
El Dorado	1,625	1,630
Magnolia	19,600	19,400
Nick Springs	1,120	1,100
Rodessa	1,700	1,530
Schuler	16,500	16,575
Smackover, light	1,680	1,550
Smackover, heavy	13,550	13,580
Troy	1,200	1,130
Urbana	1,650	1,725
Village	1,025	1,055
Total South Arkansas	69,560	69,135

ARKANSAS COMPLETIONS

Smackover—Union County

Bob Milam 1 G. J. Childs.....SE NW 8-16-16
Pumped 115 bbl., 19-gravity oil, plus 40 per cent salt water, T.D. 3,134 ft., 5½-in. casing 2,810 ft., reperf. 2,530-38 ft.

Wildcat—Union County

C. H. Murphy Jr. 2-B Cates et al..S½ NW NW 33-18-15
T.D. 2,142 ft., salt water.

Nick Springs—Union County

Stacy & Erwin 5 C. T. Grace.....SE SE 31-17-14
100 bbl., ½-in. choke, T.P. 700 lb., C.P. 1,150 lb., 7-in. casing 3,702 ft., perf. 3,598-3,626 ft., T.D. 3,702 ft.

ARKANSAS DRILLING REPORT

Clark County

Coker Oil Corp. 1 Guess.....NE SE NE 2-11-20
S.D. 612 ft.
Coker & Grieves 2 W. H. Guess....SE SW NE 2-11-20
T.D. 670 ft., 5½-in. casing 630 ft., pumped est. 50 bbl., slight show oil.
W. S. King 1 McKenzie.....SE SE NW 30-10-19
Drilling shale 779 ft.
W. P. Wilson 1 Hamilton & Mathews....SW NW 32-10-20
S.D. 1,572 ft., bailed dry.

Columbia County

Crow Drlg. Co. 1 J. W. Smart.....SW SW 12-15-20
Drilling 3,870 ft.

Ouachita County

Berry Asphalt Co. 1 G. S. Martin....SW NE SW 17-14-19
S.D. 1,405 ft.

Prairie County

Hazen Oil Co. 1 Fidelity Mutual Life Ins. Co.....
NE SW 16-2n-6w
S.D. 550 ft.

Saline County

Tedford Drlg. Co. 1 Williams.....NE SE 31-3s-15w

Sevier County

Gramp Oil Co. 2 F. Phillips.....SW SW SW 26-9n-30w
First report.

St. Francis County

U. S. Oil Corp. 1 Wilford.....NE SE NE 29-4n-1w
Drill stem stuck 2,031 ft.

Union County

C. H. Murphy 1-C Cates.....NW SW 33-18-15
Drilling 4,215 ft.

Woodruff County

John N. Watkins 1 S. Nathan....NE NE SW 18-5n-2w
T.D. 1,732 ft.

Tatem & Watkins 1 Miller . . . . . SW SE SE 7-5n-2w
First report.

EAST TEXAS BORDER DRILLING REPORT

Marion County

J. D. Parsons 1 T. W. Hook, Alexander Albright Sur., S.D. 5,006 ft., lime and shale.
P. L. Withers et al 1 T. G. Allen, Robert Potter Sur., oil sand 1,005-26 ft., T.D. 1,026 ft., bailing salt water.

Sabine County

Sturm & Womack 1 J. H. Keith, L. Groce Sur., set 10¾-in. casing 417 ft., W.O.C.

San Augustine County

Roper & Todd 1 Long Bell Lumber Co., N. Hyden Sur., moving in.

EAST TEXAS BORDER COMPLETIONS

Caddo—Marion County

T. B. Donnell 5 Easterling, M. G. Nall Sur., T.D. 1,620 ft., dry, 7-in. casing 1,500 ft.

Smithland—Marion County

R. S. Kirby 5 T. Burks, G. Coore Sur., pumped 43 bbl., T.D. 2,311 ft., 5½-in. casing 2,280 ft.
H. T. Manning, Tr., 2 O. Brown, L. Needham Sur., pumped 10 bbl., T.D. 2,390 ft., 5½-in. casing 2,330 ft.

Illinois Fields

(Continued from Page 78)

conda 810 ft., Cypress 936 ft., Paint Creek 1,017 ft., drilling 1,021 ft.
J. B. Buell 1 E. Winters . . . . . NW NW SW 18-4s-10e
Set 10-in. 200 ft.
C. A. Evarts 1 E. Brown . . . . . SE NE NW 29-5s-14w
Rig.
H. R. Rhodes 1 H. R. Golder . . . SW SE NE 29-5s-14w
Base Pennsylvanian 1,817 ft., Menard 2,138 ft., Waltersburg 2,218 ft., swabbed and flowed 2,254-82 ft., could not swab dry.
R. Halbert 1 Hubble . . . . . NE NW SW 7-6s-11e
Location.
Jungbecker 1 J. W. Hays . . . . . SE SE SW 16-7s-10e
Location.
Mabee 1 Knight . . . . . SW SW SE 10-7s-9e
Drilling 1,840 ft.
Eason 1 DeLaff . . . . . NE SW NW 8-7s-8e
Golconda 2,510 ft., Barlow 2,638 ft., Cypress 2,648 ft., sand 2,682-2,703 ft. (show oil), Paint Creek 2,740 ft., Benoist 2,810 ft. (slight show oil), Aux Vases 2,855 ft., Ste. Genevieve 2,885 ft., Fredonia 2,988 ft., T.D. 3,104 ft., may test Cypress.

Williamson County

Scott et al 1 Throckmorton . . . . . NE SE NW 29-10s-2e
Rosiclare 1,928 ft., show gas, T.D. 2,029 ft., P.B. 1,936 ft., set 5½-in. 1,918 ft.
Austen Drlg. 1 Neiber . . . . . NW SE NW 12-10s-1e
Drilling 2,040 ft.

Canadian Fields

(Continued from Page 90)

least $150,000 by the company on its exploration program.

Ontario Operations

Dover Township: Ajax Oil & Gas, Lot 1, Con. 4, Dover East, finished in the Trenton limestone at 3,200 ft. with 250,000 cu. ft. a day after a shot.

De Clute field, Raleigh Township: Union Gas 52, Lot 141 NTR, 400,000 cu. ft. at 1,520 ft.

Chatham Township: Union Gas 28, Lot 10-12, 203,000 cu. ft. at 1,625 ft. Union 29, Lot 10-12, 325,000 cu. ft. at 1,598 ft.

Oneida Township: Union Gas 253, Lot 10 WPR, 22,000 cu. ft. at 650 ft. Petrole Oil & Gas 98, Lot 2, Con. 5, 15,000 cu. ft.

Middleton Township: D. Bliss and associates, Lot 7, Con. 1 STR, 535,000 cu. ft. at 1,300 ft.

Windham Township: Dominion Natural Gas, Lot 6, Con. 1, 60,000 cu. ft. at 1,150 ft.

Walpole Township: Fred Reichheld, Lot 12-4, dry hole. Standard Gas Syndicate, Lot 16-1, 40,000 cu. ft. at 1,010 ft. Walpole Gas Syndicate, Lot 14-3, 35,000 cu. ft.

North Cayuga Township: Canfield Gas Co., Lot 9, Con. 1 STR., 11,000 cu. ft. at 675 ft.

Woodhouse Township: Walters Gas Syndicate, Lot 10-4, 750,000 cu. ft. at 1,010 ft.

Orford Township: Union Gas, Lot 54 NTR, drilling.

(Reported last week)

Chatham Township: Union Gas 26, Lot 10, Concession 12, finished at 1,470 ft. with 460,000 cu. ft. of gas. Union 27, Lot 13-10, dry at 1,710 ft.

De Clute field, Raleigh Township: Gas Producers Syndicate 7, Lot 140, S.T.R., finished around 1,530 ft. with 1,750,000 cu. ft. of gas. Union Gas 51, Lot 141, S.T.R., finished at 1,525 ft. with 530,000 cu. ft. of gas.

Lake Erie: Wood & Prior 1, 800 ft. offshore, Romney Township, finished below 1,200 ft. with 165,000 cu. ft. of gas.

Malden Township: George Willetts 1 Beaudoin, Lot 14-1, 70,000 cu. ft. gas at 985 ft.

Ekfrid Township: Wilson & Sullivan, Lot 10-2, dry at 365 ft.

Malahide Township: Union Gas 58, Lot 20-5, 177,000 cu. ft. of gas at 1,080 ft. Union 59, Lot 20-5, 450,000 cu. ft. of gas at 1,075 ft.

Yarmouth Township: Dominion Natural Gas, east of Talbotville, dry at 1,200 ft.

Oneida Township: Union Gas 252, Lot 11, West Plank Road, 35,000 cu. ft. of gas at 635 ft. Schurr & Shank, Lot 18-3, 10,000 cu. ft. at 730 ft.

Rainham Township: Lake Erie Gas Syndicate 1 Otterman, Lot 5-5, 45,000 cu. ft. of gas at 870 ft.

Townsend Township: Staysa & Barrett, Lot 13-14, 50,000 cu. ft. of gas at 1,040 ft.

Windham Township: Dominion Natural Gas 1 Hall, Lot 5-8, 60,000 cu. ft. of gas at 1,090 ft.

MISSISSIPPI AND SOUTHEAST

Drilling Activity Increases; Much Acreage Released

By GEORGE WEBER

JACKSON, Miss., Jan. 13.—Wildcatting and Tinsley field drilling indicated an early year upturn this week, with several locations staked in the field, and operations resuming in some shutdown and abandoned wildcats throughout the state. An adverse trend is seen in release of considerable acreage during the past week, following geophysical exploration which showed disappointing results. A total of 76,000 acres in three blocks in Carroll, Le Flore, George and Jackson counties was released last week, after geophysical shooting showed no prospects. In Northwest Alabama Amerada Petroleum Corp. has received an extension to January 15 to select acreage on their huge option from Tennessee Coal & Iron Co. acreage in Walker, Tuscaloosa, Fayette and Jefferson counties. From that date they have 90 days to start a wildcat on a 10,000-acre block, and if dry will have another 90 days to begin the second wildcat. This program will continue until the company has drilled all the tests it chooses.

Wildcats

Three wildcats in Mississippi were back on active status this week. In Issequena County the former W. E. Hall 1 Charping, long reported to be deepened, has been taken over by E. C. Johnston who is rigging up to drill the test deeper from its former abandoned depth of 5,020 ft.

E. R. Henderson has resumed drilling on 1 Columbian Mutual Life Insurance in Montgomery County, formerly abandoned at 3,479 ft., and in Tishomingo County Mellen & Gear have resumed activity on 1 Wood, shut down for several weeks. In the latter test, a good show of gas was encountered at 1,053 ft. in the Stone River series, a gage of 100,000 cu. ft. of gas being reported from that section. The test is being drilled ahead, however, below 1,620 ft. at latest reports.

In Clarke County Walsingham & Earles 1 School Land showed oil, according to reports. A core was made at 2,766-71 ft. but no recovery resulted, and operators were last reported drilling below 2,971 ft.

Tinsley Activity

Drilling at Tinsley shows signs of a marked revival, some of which may mar the field's good record as to spacing pattern. Several 40-acre locations were staked in the south and southeast sections by Union Producing Co. et al, but an increased feeling favoring closer spacing is indicated by some interests in the field. Inciting the current trend is the issuing of permits to R. F. Whelan for three wells in proven territory along the right-of-way of the Yazoo and Mississippi Valley Railroad. Two more are asked by the operator. R. W. Gray has been granted a permit on 10 acres just ¼ mile southwest of Whigate Oil Co. 1 Robertson, a dry hole located northeast of the main fault. A hearing has been set for February 3, to decide on the application of J. F. Barbour, Jr., to drill on a 2.23-acre tract in the southeast section of the field. A petition has been circulated, asking unrestricted drilling in the field. At present, however, no actual drilling has begun on these small tracts. The Whelan locations may be prevented by suit from the operator through whose leases the railroad runs in the field, and the Gray test is located so near the edge of estimated production, i.e. the major fault, that it may not be attempted.

Two new completions in the field brought Tinsley's total to 111 producers, of which 90 are pumping, and 21 are flowing. Production jumped sharply during the first week of the year, from a daily average of 13,837 bbl. late in December, to 16,684 bbl. in January. Much of the crude is being run to storage.

MISSISSIPPI COMPLETIONS

Tinsley—Yazoo County

Union 7 Perry, SW NW 24-10-3, pumped 510 bbl., Woodruff section 4,553-71 ft., 7-in. casing 4,551 ft., T.D. 4,590 ft.
Union 3 Harris, SW NW 30-10-2, 414 bbl., ¼-in. choke, T.D. 200 lb., C.P. 250 lb., T.D. 5,031 ft., 7-in. casing 5,020 ft.

MISSISSIPPI DRILLING REPORT

Clarke County

Walsingham & Earles 1 School Land, SW NW NE 16-4n-15e, drilling 2,977 ft.

Forrest County

Fohs Oil Co. 1 Batson-Hatton, NW SE 10-1s-12w, drilling 8,456 ft.

Hinds County

Hassie Hunt 1 Montgomery, NW SW 12-5n-4w, drilling 4,127 ft.

Grenada County

Womble & Williams 1 Conn. Gen. Life Ins. Co., NW SE 28-23n-5e, T.D. 1,875 ft., preparing to resume drilling.

Issequena County

E. C. Johnston (formerly W. E. Hall) 1 Irby Charping, NE NW 29-10n-8w, rigging up to deepen, old T.D. 5,020 ft.

Kemper County

R. J. Dean 1 Land, NW NE 12-10n-14e, T.D. 2,102 ft., S.D.

Montgomery County

E. R. Henderson 1 Columbian Mutual Life Ins. Co., 36-21n-5e, old well drilled deeper, old T.D. 3,479 ft., resumed drilling 4,213 ft.

Noxubee County

Hope & Thompson 1 Donahoo, NW 25-16n-17e, T.D. 2,165 ft., S.D.

Sharkey County

British American 1 F. B. Houston estate, N½ NE SW 23-11n-7w, T.D. 4,027 ft., sidetracked and drilled to 1,319 ft. in new hole, S.D.

Tishomingo County

Mellen & Gear 1 E. K. Wood, SE SE SE 21-4s-11e, show gas 1,053 ft., flowed 100,000 cu. ft., drilling ahead 1,623 ft.

Warren County

Waggoner Bros. Oil Co. 1 Parker, NW NW 17-14n-1e, moving in material.

MISSISSIPPI NEW LOCATIONS

Tinsley—Yazoo County

R. F. Whelan 1 Y.&M.V.R.R., NW SW SE 2-10-3.
R. F. Whelan 2 Y.&M.V.R.R., NE NE SW 2-10-3.
R. F. Whelan 3 Y.&M.V.R.R., NE SE NW 2-10-3.
Union & Texas 1-A Childress, NE SW 24-10-3.
Union 1 Childress-Guymes, SW SW 24-10-3.
Union 1 Childress-Jones unit, SW SE 24-10-3.
Union 5 Florence Harris, SE NE 25-10-3.

THAT'S WHERE TO STAY IN ST. LOUIS!
HOTEL Mayfair
DOWNTOWN - REAL FOOD AND SERVICE - NEARBY PARKING - PRIVATE BATH RADIO RECEPTION

MARKET RECORD OF ACTIVE OIL STOCKS . . .

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1940 High	1940 Low	Week ended Jan. 11 High	Week ended Jan. 11 Low	Week ended Jan. 11 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1940	Com. sh. earn. 1939	Com. sh. earn. 1938	1939 High	1939 Low	1938 High	1938 Low
58½	38½	49⅛	47¾	48½	Amerada Corp.	788,675	N.P.	50cQ	1-31-41	$2.00	$1.56	$2.07	74½	50	78	55
27½	18¼	24	23½	23⅞	Atlantic Refining	2,663,999	$25	25cQ	12-16-40	1.00	1.66	1.40	24¾	18⅛	27⅝	17⅝
16⅝	8½	10½	9¾	10	Barber Asphalt Co.	390,223	$10	25c	5-21-40	.50	1.39	—.85	21	10¼	23¾	12⅛
13⅜	7⅛	9⅝	8⅞	9⅛	Barnsdall Oil Co.	2,558,779	$5	15c	12-9-40	.60	.76	1.26	19½	11⅛	21⅝	10⅛
8⅛	5½	6	5⅞	6	Consolidated Oil Corp.	13,751,726	N.P.	12½cQ	2-15-41	.72½	.55	.55	9⅞	6½	10¾	7
25	16⅛	20⅜	19	20	Continental Oil of Delaware	4,682,572	$5	25cQ	12-23-40	1.00	1.35	1.10	31½	19⅞	35⅝	21¼
6⅞	3⅜	4½	4⅛	4⅛	Houston Oil	1,098,618	$25		10-17-30		.43	.83	9⅜	4½	9¾	5
14⅜	9	11⅜	10¾	10¾	Lion Oil Refining	435,815	N.P.	25cQ	12-31-40	1.00	1.50	2.09	18⅛	10	25⅛	15⅝
17⅜	11½	14⅞	14½	14⅞	Mid-Continent Petroleum	1,857,912	$10	40c	12-2-40	.80	1.42	.56	18	11⅛	22⅝	12¾
11¾	7⅛	11	10¾	11	Mission Corporation	1,378,645	$10	25c	12-20-40	.25	.87	1.04	14⅞	8¾	17⅜	10⅝
9¾	4⅝	6⅝	5⅞	6½	National Supply	1,155,517	$10		12-22-37	....	—.87	—.79	15½	5⅝	23	12⅜
8¾	5⅜	7⅞	7½	7½	Ohio Oil Co.	6,563,377	N.P.	25c	12-14-40	....	—.10	.25	10½	6	14⅞	8⅜
8⅞	5½	7	6¾	7	Pacific Western Oil	1,000,000	N.P.	40c	12-19-39	....	.81	1.22	11⅞	7	15⅞	10¼
10½	6¾	8½	8½	8½	Pan American Pet. Trans.	4,702,945	$5	25c	12-21-40	.25	1.10	.08	8¾	5	9¼	6¼
41¾	27⅛	41	39½	39¾	Phillips Petroleum	4,449,052	N.P.	50cQ	11-30-40	2.00	2.21	2.03	46½	31¼	44⅜	27¼
22¾	15	16⅝	16⅜	16⅝	Plymouth Oil Co.	1,038,633	$5	25c‡	12-23-40	‡1.30	2.38	2.59	24	17⅛	25⅜	15
11½	6⅜	8⅞	8⅛	8⅝	Pure Oil Co.	3,982,031	N.P.	25c	12-20-40	.25	1.11	.38	11⅜	6⅛	13½	8¼
9¼	5⅞	8¾	8½	8¾	Richfield Oil Corp.	4,010,000	N.P.	50c	12-21-40	.50	.65	.51	10¼	6⅝	9⅞	5
20	11	15⅝	13⅝	15¼	Seaboard Oil of Delaware	1,244,383	N.P.	25cQ	12-14-40	1.00	1.40	1.52	24⅝	15½	27½	15½
13½	7⅝	12½	11⅛	11⅝	Shell Union Oil	13,070,625	N.P.	50c	12-20-40	.75	.77	.72	17¼	9⅞	18⅜	10
23¼	12¼	22⅜	21⅜	22	Skelly Oil	995,349	$15	50c	12-20-40	1.25	1.99	2.27	29½	15½	34⅜	18½
12½	7⅛	9¼	9	9	Socony-Vacuum	31,206,071	$15	25cSA	9-16-40	.50	1.10	1.29	15⅛	10¼	16⅝	10⅝
26⅛	16¼	20½	20	20½	Standard Oil of California	13,003,953	N.P.	25cQ	12-16-40	1.00	1.38	2.22	33⅝	24¼	34⅞	25⅛
29	20¾	27⅞	26½	27¾	Standard Oil (Indiana)	15,272,020	$25	50c†	12-16-40	1.50	2.23	1.82	30	22¾	35½	24⅝
46½	29⅞	36½	35¼	36½	Standard Oil of New Jersey	27,280,998	$25	75c†	12-16-40	1.75	3.26	2.86	53½	38	58⅜	39⅜
65⅞	46¾	58¾	57	57½	Sun Oil	2,434,863	N.P.	25cQ	12-16-40	*1.00	2.74	1.07	66	45¾	65⅛	45
2½	1⅛	1¾	1⅝	1¾	Superior Oil Corp.	1,388,979	$1	10c	12-28-40	.10	.04	.24	3⅝	1⅜	4¼	1⅜
47⅝	33	39⅞	38⅞	39½	Texas Corp.	10,876,139	$25	50cQ	1-2-41	2.00	3.02	2.13	50⅜	32½	49⅝	32⅝
4¼	2½	3⅜	3⅛	3⅜	Texas Gulf Producing Co.	888,147	N.P.	10c	12-14-40	.20	.69	.86	5¾	3¼	5⅞	2⅝
8⅝	5⅜	6	5⅞	6	Texas Pacific Coal & Oil	888,236	$10	10c	12-2-40	.40	1.00	1.16	11⅝	7	12½	7
12	8¾	10⅜	10⅛	10¼	Tide Water Associated	6,371,827	$10	15c	12-2-40	.70	1.05	1.28	14¼	9½	15¾	10⅜
17½	12	14	13¾	13⅞	Union Oil Co. of California	4,666,270	$25	25c	2-15-41	1.00	1.25	1.47	19¾	15⅛	22½	17⅛
29⅞	22¾	29¾	28¾	29¾	Union Tank Car Co.	1,177,381	N.P.	45c	12-2-40	1.75	2.07	1.16	24¼	20⅛	23½	20
3⅝	1¾	1⅞	1⅞	1⅞	Wilcox Oil & Gas	470,768	$5	10c	2-15-40	....	.77	.52	4¼	2⅜	3½	1⅝

*Also 5 per cent in stock. †Includes extras. ‡Also 2 per cent in stock. —Deficit.

New York Curb Exchange

1940 High	1940 Low	Week ended Jan. 11 High	Week ended Jan. 11 Low	Week ended Jan. 11 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1940	Com. sh. earn. 1939	Com. sh. earn. 1938	1939 High	1939 Low	1938 High	1938 Low
10¾	4½	6⅝	6⅜	6⅝	American Republics Corp.	1,308,049	$10	25c	12-18-40	....	$0.14	—.22	11¾	5½	11⅝	5
3¼	1⅜	1¾	1¾	1¾	Bridgeport Machine Co.	263,700	N.P.	$1.25	12-30-37		—.95	—.14	7¼	2½	10¼	4⅞
43	28	39½	39	39½	Buckeye Pipe Line Co.	200,000	$50	$1	12-14-40	$4.00	3.13	2.36	34⅜	26½	39	22½
117	95	110	109	110	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	12-16-40	6.00	7.87	5.32	130	108⅝	128	97
6¾	4	5⅛	4⅝	5⅛	Cities Service (new)	3,703,978	$10	....	6-1-32	....	.68	.23	9¼	4¼	11	5⅛
2⅛	⅝	¾	⅝	⅝	Cosden Petroleum	465,332	$1	....	.....	....	....	....	2¼	½	2⅜	⅞
24¼	11⅝	15¼	14	15⅛	Creole Petroleum	6,974,356	$5	50cSA†	12-16-40	1.00	1.38	1.64	28	16¾	27½	17½
4⅜	2⅞	4¼	4¼	4¼	Darby Petroleum	351,390	$5	25cSA	1-15-39	....	.03	.69	7⅛	3⅝	10¼	5½
2	¾	..	..	..	Derby Oil & Refining	263,162	N.P.	...	.....	....	—.37	—.91	2⅝	1½	3½	1½
31	20¼	28¾	21½	28¾	Eureka Pipe Line	50,000	$50	$3.50	2-1-41	2.25	.63	—.37	23	15⅛	31	16
39⅞	25⅛	33¼	32½	32¾	Gulf Oil Corp.	9,076,202	$25	25cQ	12-27-40	1.25	1.69	1.43	45⅛	29¼	46⅞	33
68	47⅛	61¾	59	59	Humble Oil & Refining	8,987,840	N.P.	62½c	12-26-40	2.00	3.33	3.98	71	52½	72⅝	56
12⅜	5⅜	6⅞	6¼	6⅞	Imperial Oil of Canada	26,965,078	N.P.	25c	12-2-40	.62½	.71	.96	17	11⅜	19½	14⅛
7¾	3	3½	3½	3¾	Indiana Pipe Line	300,000	$7.50	20c	11-15-40	*2.80	.33	.47	7¼	5½	9⅝	6
19¾	8¼	10⅝	9½	10½	International Petroleum	14,324,088	N.P.	30c	12-21-40	1.25	1.19	1.98	27½	17	31¼	21
2¾	1⅝	1⅞	1¾	1⅞	Kirby Petroleum Co.	500,000	$1	10c	4-15-38	....	.06	.14	3¾	2⅛	5	3⅛
10⅜	7⅝	10⅛	9½	10⅛	Lone Star Gas	5,518,347	N.P.	30c	12-21-40	.70	.98	.88	10½	7⅛	10⅝	6⅝
6¼	3¾	4½	4⅜	4½	Louisiana Land & Exp.	2,966,762	$1	5c	12-16-40	.35	.22	.45	7¾	4	9⅜	6½
17	9¼	..	..	..	Margay Oil Corp.	149,943	N.P.	25cQ	1-10-41	1.00	1.52	2.28	17	14½	24	16
8½	6½	8	7⅞	8	Midwest Oil Co.	998,474	$10	45c	12-16-40	.90	.99	.93	8¾	6⅝	9¾	6⅝
6¼	4⅞	5¾	5¼	5½	Mountain Producers	1,593,584	$10	30cSA	12-16-40	.60	.70	.62	6	4⅞	5¾	4½
13⅛	10	12	11¾	12	National Fuel Gas	3,810,183	N.P.	25cQ	1-15-31	1.00	.95	.84	14	11¼	14⅝	11½
12½	8¾	12	10¼	11¼	National Transit	509,000	$12.50	50c	12-16-40	1.00	.91	.88	9½	7¼	9¼	6½
1¼	¾	1⅛	1	1	New Mexico and Arizona	1,000,000	$1	1c	12-1-37	..	.02	.02	1⅜	1	2⅝	1½
7¾	5¼	..	..	..	New York Transit	100,000	$5	25c	9-20-40	.60	.88	.16	6	4	4½	3½
9⅞	6	9½	8¼	9½	Northern Pipe Line	120,000	$10	40c	12-2-40	.80	.31	.24	7	4½	6	4
5½	2½	3¼	3	3⅛	Pantepec Oil	2,856,872	$1	....	.....	....	....	....	7⅝	4	7⅜	3½
3¼	1¼	1½	1½	1½	Root Petroleum Co.	336,045	$1	25c	2-1-37	....	.70	.17	5	1¼	4½	1⅝
3	1½	2½	2½	2½	Ryan Consolidated	298,931	N.P.	10c	12-28-40	....	.16	.29	3	1⅞	4	2⅛
11¾	4¾	8	8	8	Southern Pipe Line	100,000	$10	25c	9-3-40	.50	.25	—.27	4⅞	3½	5⅜	3¼
44	28	39¾	38¾	39¾	South Penn Oil	1,000,000	$25	$1.87½†	12-20-40	2.50	2.84	1.44	40½	26¾	39	28¾
35	21	30½	24½	30½	Southwest Penna. Pipe Lines	35,000	$50	50c	12-26-40	6.50	2.06	—.41	23	18	22¼	16½
20⅞	16½	20	19⅝	20	Standard Oil of Kentucky	2,604,790	$10	55c†	12-16-40	1.30	1.53	1.45	20⅛	17¼	18⅝	15
41¾	26¼	40⅛	39	39	Standard Oil of Ohio	753,740	$25	$1.25†	12-14-40	2.00	6.64	1.81	32¾	17	22⅝	16¼
2	1⅜	1⅝	1½	1½	Sunray Oil	1,975,876	$1	5c	12-20-40	.10	.25	.23	2¾	1⅜	3¼	2
3⅛	2	3	3	3	Texon Oil & Land	936,024	$2	10c	12-30-40	.40	.49	.56	4	2⅝	5¼	3½
3⅜	2	2½	2⅜	2½	Transwestern Oil Co.	750,000	$10	....	.....	....	—1.42	.12	6	2½	5¼	2⅝
2⅛	¾	⅟₁₆	⅟₁₆	⅞	United Gas Corp.	7,818,959	$1		.....	....	—.55	—.51	3⅜	1½	5¼	2⅝

*Includes $2.50 capital distribution. †Includes extras. —Deficit.

Personal Paragraphs

A. S. RITCHIE, McPherson Drilling Co., Wichita, Kans., has been elected director for the Kansas area of the American Association of Drilling Contractors.

J. U. TEAGUE, superintendent, Hogg Oil Co., Houston, Tex., has been elected chairman of the Gulf Coast section, A.I.M.E. Other officers who were elected are: S. E. BUCKLEY, Humble Oil & Refining Co., vice chairman; ALEXANDER DEUSSEN, consulting geologist, secretary-treasurer. H. E. TREICHLER, Texas Gulf Sulphur Co.; GEORGE SAWTELLE, Kirby Petroleum Co.; J. H. McEVOY, McEvoy Co., and R. L. MORSE, Shell Oil Co., Inc., were named directors.

R. E. COLLOM, vice president, Continental Oil Co., has been reelected president of the California Oil and Gas Association.

W. N. LITTLE, petroleum engineer with Tide Water Associated Oil Co., Kilgore, Tex., has been transferred to Illinois.

E. E. MOORE has rejoined Arrow Drilling Co. as chief engineer, purchasing agent and right-hand man to the management. He will continue to make Oklahoma City, Okla., his home.

LEO HINDERY, of Gas Service Co., St. Joseph, Mo., has tendered his resignation effective January 15, to accept a position as assistant acting executive secretary of the Junior Chamber of Commerce.

W. R. WATKINS, JR., formerly a member of the gravity-meter crew for Gulf Oil Corp., has been named as an additional field scout for the company in the Fort Worth basin area of North Texas. He will operate out of Fort Worth, Tex.

W. EARL CUNNINGHAM has announced that he has sold his interest with the Oil Well Drilling Co., Dallas, Tex. He was part owner, field manager, and secretary of the corporation since its inception. Mr. Cunningham's future business plans are indefinite.

GEORGE B. CORLESS, production superintendent, Humble Oil & Refining Co., Houston, Tex., addressed the student section of the A.I.M.E., at University of Texas, recently, on "Obtaining and Holding an Engineering Position."

C. S. MAYFIELD, petroleum engineer with Cities Service Oil Co., East Texas, has accepted the position of petroleum engineer with the Cotton Valley Operators' Committee, at the recycling plant in the Cotton Valley field, North Louisiana.

H. C. GIBSON, manager of the former New York division of Cities Service Oil Co., has been appointed manager of a new division consolidating the former New York and Harrisburg divisions into one unit. R. J. HULL, former New England manager, has been made the division's sales manager. Mr. Hull will be succeeded in Boston by PARKER H. KENNEDY, who formerly headed the New York district sales department.

W. R. FINNEY, a member of the operating staff of the Standard Oil Co. (New Jersey), has returned to his New York City headquarters after spending a vacation period in California. En route home he visited points in the Mid-Continent area, where he was formerly located.

JOSEPH STEELE has been appointed purchasing agent for Indiana Pipe Line Co., Buckeye Pipe Line Co., Northern Pipe Line Co., and New York Transit Co., according to an announcement by P. R. APPLEGATE, New York City, president of the companies. He succeeds O. L. NAHOUSE, retired.

L. MOSELEY MOFFITT, Triangle Drilling Co., Inc., Shreveport, La., has been elected president of the Shreveport Chamber of Commerce. He also is chairman of the regular spring meeting of the southwestern district, A.P.I., to be held in Shreveport, February 27-28, and is in charge of the President's Birthday Ball in Shreveport.

WILLIAM O. BEALL, Sinclair Prairie Oil Co., Tulsa, was reelected to a third term as president of the Osage Oil and Gas Lessees Association, at the group's annual membership meeting at Tulsa last week. Also reelected were W. P. Z. GERMAN, Skelly Oil Co., vice president, and CLAREL B. MAPES, of the Mid-Continent Oil and Gas Association, as secretary-treasurer.

IRVIN S. LAYTON, scout in the Kansas district for the Ohio Oil Co., is the new constable at Wichita City Township.

PHILIP D. BAKER, petroleum engineer with Louark Producing Co., Shreveport, La., was transferred January 1 to the petroleum engineering department of Carter Oil Co., Tulsa.

FRANK F. FUNK, for several years geologist for Stanolind Oil & Gas Co., in its Midland, Tex., office, has been made East Texas district geologist and transferred to Tyler.

DON SANDSTRUM, formerly with Continental Oil Co., Ponca City, Okla., has gone to Baytown, Tex., where he will be assistant field engineer for Humble Oil & Refining Co.

E. L. HOLLAND, head of the drafting department of Standard Oil Co. of Louisiana, at Shreveport, La., is the new potentate of El Karubah Temple, Ancient and Accepted Order of the Mystic Shrine. He was elected at a meeting last week.

C. L. JONES, former vice president and director of Socony-Vacuum Oil Co., Inc., and L. H. ATKINSON, of the Atkinson Petroleum Corp., have formed the Jones-Atkinson Corp. for the marketing of petroleum products. Their offices will be at 9 Rockefeller Plaza, New York.

PAUL C. DEAN, of the firm of Dean Brothers, Fort Worth, Tex., has been named president of the Fort Worth Geological Society for 1941. Other officers were C. L. MOHR, Ambassador Oil Corp., vice president, and W. J. HELSEWECK, Gulf Oil Corp., secretary-treasurer.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

Production for the year 1915 was 310,376,283 bbl. Oklahoma led all states with 117,910,444 bbl., or 1,853,915 bbl. more than the combined total of the two next most important producers, California and Texas.

The deepest well in Oklahoma has just been completed near McAlester. It is 4,303 ft. deep. The former record holder was 3,915 ft. deep.

Announcement is made of the formation of Pan American Petroleum & Transportation Co., with a capitalization of more than $100,000,000.

20 YEARS AGO

Senator Phelan, of California, and Senator McKellar, of Tennessee, propose reprisals if England continues its endeavor to acquire monopoly of the world oil supply. The Associated Press declares that "England has again stolen a lap in the world race for the control of oil." British interests have obtained concessions in northern Greece.

Finishing touches are being put on the Government's helium-gas plant near Fort Worth, Tex.

10 YEARS AGO

Universal Oil Products Co., owner of the Dubbs cracking process, has been acquired by United Gasoline Co., a corporation in which controlling interests are held by Shell-Union Oil Co. and Standard Oil Co. of California.

Moncrief, Farrel et al 1 Lathrop cored saturated sand. It is in Gregg County, Texas, about 12 miles from the Bateman well and looks like another pool opener.

It is expected that six hydrogenation plants will be in operation before the end of June.

R. S. PERKINS, formerly production accountant for Stanolind Oil & Gas Co., Tulsa, has resigned to become district manager for Publishers Guild.

WILLIAM DODGE, Texas Co., executive, played in a foursome with the Duke of Windsor at the dedication of a new golf course at Cat Cay, Bahamas.

WILLIAM C. TRINGHAM, secretary and treasurer of Missouri-Kansas Pipe Line Co., has been elected vice president of that concern in addition to his previously held posts.

C. C. TOOMEY, president of the Midco Oil Corp., Tulsa, was elected president of the Tulsa Young Men's Christian Association at a meeting on Friday of last week.

GORDON F. FARNED, superintendent of the Baytown, Tex., Humble refinery, has been elected chairman of the eastern Harris County Boy Scout Council.

R. W. SMITH, mineral economist, U. S. Bureau of Mines, Tuscaloosa, Ala., addressed members of the Mississippi Geological Society last week at their monthly meeting in Jackson, Miss.

HARRY NOBLE, junior engineer of the Gas Service Co., St. Joseph, Mo., has resigned to accept a position as junior engineer on construction work. The work will be under the direct supervision of the U. S. Army.

LYLE C. HARVEY, president and general manager of the Bryant Heater Co., Cleveland, Ohio, was elected recently to the newly created post of second vice president of the Association of Gas Appliance and Equipment Manufacturers.

Engineer Reaches Top

Samuel Jackson Dickey, who has just been recently elevated to the presidency of General Petroleum Corp. of California, at Los Angeles, Calif., was graduated from the University of Pennsylvania in 1904 with the degree of bachelor of science in mechanical engineering. Upon graduation he was elected to membership in Sigma Xi, honorary fraternity.

S. J. DICKEY

Previous to his affiliation with General Petroleum Corp., Mr. Dickey experienced broad service in various engineering capacities, first during his school years with the Pennsylvania Railroad, Bell Telephone Co., and University of Pennsylvania. For 8 years following his graduation, he served as traveling plant-efficiency engineer, superintendent of development work, and allied activities for the United States Improvement Co., of Philadelphia. In 1912, he was appointed engineer and superintendent of Syracuse Lighting Co., Syracuse, N. Y., where he directed the design, installation, and operation of a toluene plant, to manufacture toluene from manufactured gas for the production of trinitrotoluene. This led to his appointment by the War Department to direct installation of toluene plants on the Pacific Coast.

Mr. Dickey's service with General Petroleum Corp. of California began in 1919, when he joined the company as refinery engineer. A year later he was made chief engineer. He was elected a director in 1927, and in 1930 he was made vice president in charge of manufacture. In assuming his new position as president, he succeeds A. L. Weil, resigned.

H. R. SMITH, independent operator, Alice, Tex., is preparing to leave for an extended vacation tour of South America.

PERRY W. WARD, independent oil operator, was elected potentate of the Akdar Shrine, Tulsa, at a meeting last Friday night.

M. F. McANALLY, Stanolind Pipe Line Co., is now in Oklahoma City, Okla., where he has been transferred from the Seminole area.

PHIL HURRY, who has been a geologist for the Bahrein Petroleum Co., Ltd., on Bahrein Island for 2 years, is on his way home. He is expected to arrive in San Francisco, Calif., March 1.

F. A. STIVERS, vice president and general manager of Texas-Empire Pipe Line Co., Tulsa, returned to his office last week after a vacation spent at Miami and other points in Florida.

SYLVESTER M. MOREY, advertising manager of Sinclair Refining Co., resigned on January 1 to take charge of the New York office of Hixson-O'Donnell. Inc., of Los Angeles, advertising agency which will handle the Sinclair account.

A. L. TAYLOR has been elected president of the Baytown (Texas) Employes Humble Club, an organization of more than 2,600 Baytown Humble refinery workers which sponsors recreational activities for members and families. He succeeds T. S. KING.

IRA BRINKERHOFF, district geologist at Houston, Tex., for Stanolind Oil & Gas Co., has been transferred to the Chicago offices of the Standard Oil Co. of Indiana. His place has been filled by the promotion of RAY LEWIS from San Antonio to Houston.

RICHARD STEINHORST, of Texas Co., was elected chairman of the Wichita, Kans., chapter, Division of Production, American Petroleum Institute, at the most recent meeting of the group. R. P. MOSCRIP, Shell Oil Co., was named vice chairman; S. D. CATES, Derby Oil Co., second vice chairman, and H. N. WALDRON, Continental Oil Co., secretary-treasurer.

Shifts: EDMUND C. NEWTON, engineer, Atlantic Refinery Co., from Philadelphia, Pa., to Broomall, Pa.; O. W. SCHLUP, engineer, Foster Wheeler Corp., from Curacao, Netherlands West Indies, to St. Marys, W. Va.; F. L. KALLAM, engineer, Industrial Engineers, Inc., from Huntington Park, Calif., to East Pasadena, Calif.; ALBERT S. JOHNSON, Southern Union Gas Co., from Dallas, Tex., to El Paso, Tex.; ROBERT E. ELLIS, superintendent, Kansas & Gulf Co., from Mattoon, Ill., to St. Clairsville, Ohio; A. J. HIBBLER, geologist, Texas Co., from Newton, Miss., to Many, La.; S. D. McCLOY, president, Keystone Gas Co., from Washington, Pa., to Canonsburg, Pa.; L. H. VOGEL, superintendent, Thomas H. Allen Co., from Stafford, Kans., to Ellinwood, Kans.; WILLIAM J. DEVANEY, engineer, Cities Service Oil Co., from Great Bend, Kans., to Bartlesville, Okla.; JOHN A. BAILEY, engineer, Shell Oil Co., Inc., from Stroud, Okla., to McPherson, Kans.

GEORGE W. STRAKE, independent oil operator of Houston, Tex., was in New York last week where he received the highest papal decoration that can come to a Catholic layman. He was made a Knight of Sovereign Military Order of Malta, a distinction that has been conferred on about 30 American citizens.

GEORGE E. KENNEDY, for 41 years with Standard Oil Co. of California, and since 1931 a member of the board of directors, recently made a request for retirement, which the board granted with regrets. Mr. Kennedy was made chairman of the sales committee in 1928, and in 1930 he became general sales manager.

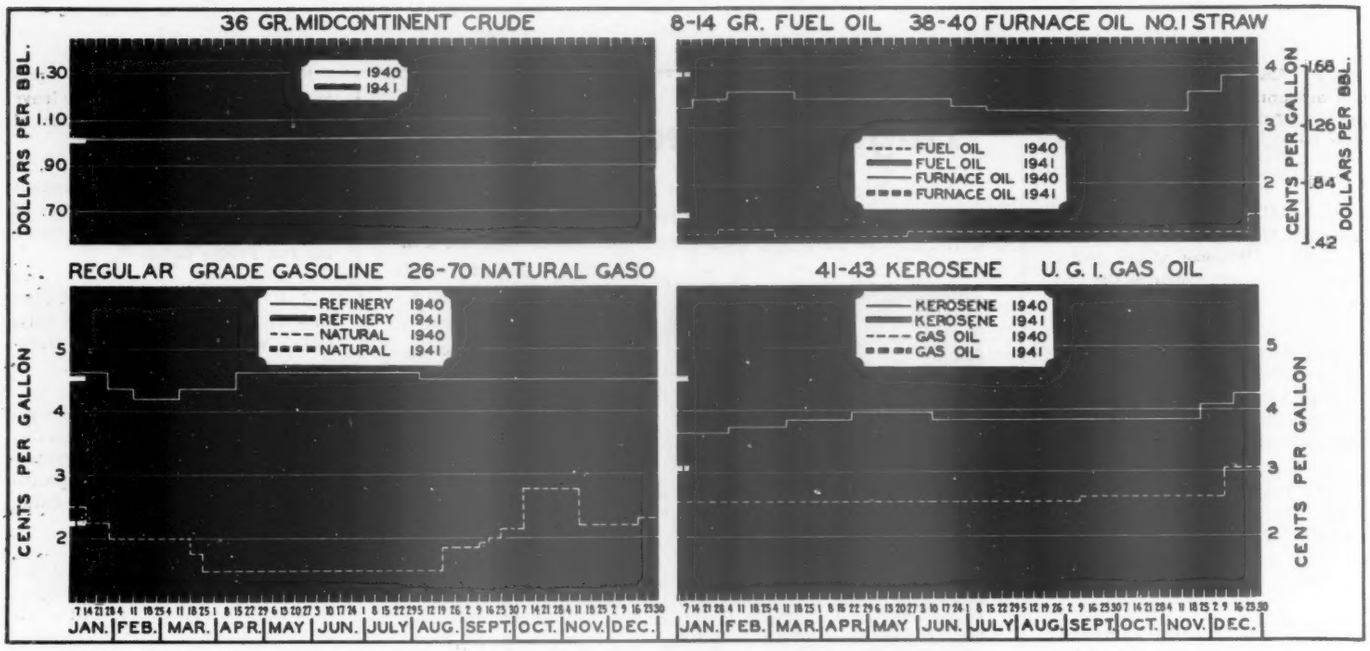
WALTER W. LARSH, Wichita, Kans., for the past 15 years with the geological department of Stanolind Oil & Gas Co., has resigned as district geologist to enter private consulting work in geological and production matters. The move is effective January 15. CHARLES T. JONES succeeds Mr. Larsh as district geologist.

I. O. O'SHAUGHNESSY, president of the Globe Oil & Refining Co., was honored at the annual dinner of the officers and directors of the company at Wichita, Kans., last week. STEVE REDFERN, safety engineer, was in charge of preparations for the meeting.

JOHN P. FALLON, formerly manager of terminals of Standard Oil Co. of Pennsylvania, has been elected president of the Tuscarora Oil Co., Ltd., and will make his headquarters in Harrisburg, Pa. He will be succeeded by J. G. HUESSNER as chief of terminal operations.

V. H. WILHELM, assistant to the production manager of the Texas Co., Los Angeles, Calif., presided at the first meeting of the southern California section, A.I.M.E., since his election as chairman last month. He presented LEO RANNEY, who discussed horizontal drilling for oil and water.

JOHN E. VANDALL, Magnolia Petroleum Co., has been elected president of the Oklahoma City Geological Society, Oklahoma City, Okla., for 1941. CLYDE E. DORR, consulting geologist, is vice president, and GRAYDON H. LAUGHBAUM, Sinclair Prairie Oil Co., is secretary and treasurer.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Condensate Competition Makes Deep Impression on Interior Market

By H. STANLEY NORMAN

CONDENSATE from the rapidly spreading recycling plants in Texas and Louisiana is making impressive inroads in the spot market for regular grades of Mid-Continent refinery gasoline. Approximately 100 cars of condensate daily are reported moving into territory normally supplied with gasoline from Mid-Continent refineries. Production from recycling plants is moving in direct competition with regular motor fuel at prices virtually precluding early elevation of gasoline quotations.

Motor-fuel movement from inland refineries continues at the highest winter-season rate in the history of the industry. Competition from producers of condensate is forcing crude refiners in the Group 3 territory to make price concessions on an expanding scale in order to hold several of their customers. The market impact of condensate production at the current rate of nearly 25,000 bbl. daily is just now appearing in the Group 3 territory. Condensate has been inimical to refinery gasoline prices on the Gulf Coast for several months, largely because the limited earlier volume met less resistance in moving to that market.

Direct Competitive Fuel

Some of the condensate which requires only addition of tetraethyl lead to qualify it as regular-grade gasoline is moving into the market at hardly more than crude-oil prices. This means that enough material is available at around 3 cents to be an increasingly important market factor. Refinery-gasoline prices are being maintained in the Group 3 territory with effort.

The growing threat that Gulf Coast markets would become so choked that distress material would back up into consuming areas normally served by refineries in the interior appeared to be temporarily dissipated. Inquiries were circulated among Gulf refiners for six cargoes of motor fuel, one of residual and one of distillate fuel oil.

Two of the cargoes are scheduled for export. The export inquiries cover one cargo of motor fuel and one of distillate meeting diesel specifications. One of the six gasoline cargoes specifies 87-octane aviation motor fuel and another calls for third-structure material. The remaining four cargoes of motor fuel sought consist of 72-74 (regular) (leaded) material. One of the requirements common to all eight inquiries is for loading during the last part of January.

Refined Oil Market Barometer

Inquiries for several cargoes of gasoline and fuel oil developed during the week on the Gulf Coast, probably as a result of the slip in tanker rates. At least two of the cargoes for which inquiry was made are scheduled for export. Loading during the last half of January is specified. Appearance of new business in the Gulf market alleviated the pessimism existing there for several weeks.

MID-CONTINENT: Interior refiners report competition from condensate is depressing gasoline.

GULF COAST: Six cargoes of motor fuel and two of fuel oil are involved in the new inquiries.

CALIFORNIA: Gasoline is inactive on a relatively quiet market.

PENNSYLVANIA: Demand stiffening for bright stock and steam-refined cylinders.

CHICAGO: Gasoline market unsettled. Fuels in firm demand at strong prices.

Revival of business on the Gulf Coast market, providing the inquiries result in sales, would go far in easing the market tension at that vulnerable spot and in turn relieve the back pressure on markets normally disengaged from coastal conditions. Coastwise shipments have been subnormal for weeks. The break in tanker rates 10 days ago probably had a bearing on the new inquiries.

Shipments of distillate fuel oils from the Mid-Continent refining district have been sustained at the higher January level through the first 2 weeks of the month. There appears to be a firm demand for practically all grades of fuel in the northern part of the Middle West. Market conditions in the Group 3 territory are particularly strong for kerosene and range oil.

Price Resistance Fading

Mid-Continent refiners report no particular difficulty in obtaining quoted prices for distillate fuels. Price is a secondary consideration at the moment in the burning-oil trade. Consumption is brisk in Michigan, Wisconsin, Minnesota, Indiana, Ohio, and other states served to some extent from the Group 3 market.

Spot prices are strong on residual fuel oil, although Mid-Continent plants have little of this product to offer in the spot market. Bulk of residual production in Group 3 goes to railroads under long-term contracts. Suppliers are considering higher prices on railroad contracts as they come up for renewal. The bulge in demand for residual fuels is already evident in most supply centers. Forecasts of a 10 per cent advance in fuel-oil consumption this year with emphasis on residuals are considered well within reasonable expectations in view of the increment in demand already in evidence.

Eastern Market Tone Softens as Fuel Consumption Declines

By J. P. O'DONNELL

NEW YORK, Jan. 14.—Evidences of strength that had been apparent previously in the eastern market were lacking in some products and were less pronounced in others. Somewhat easier tanker rates, additions to inventories and unseasonal weather conditions gave the market a different aspect from that of recent weeks.

No. 2 fuel oil continued to be quoted at 4.9 cents per gallon in the New York Harbor area by virtually all suppliers, but stocks, which had decreased steadily since the consuming season opened, were reported higher. Except for a brief spell of subfreezing weather, comparatively mild temperatures have prevailed in the eastern territory. The consequent decline in consumption with the increase in stocks has given the market an easier tone.

The rise in inventories, reported at 451,000 bbl. by the American Petroleum Institute for the week ended January 4, has been comparatively small and stocks are still almost 1,600,000 bbl. below their early November high. Because of the small addition to stocks and the fact that the market still appears somewhat strong, it is believed that a sharp change in the weather would return it to its former firm basis in a short time.

The tanker-rate factor, on the basis of the light chartering consummated during the past week, was apparently lessened. A clean tanker was reported chartered on the basis of 55 cents for gasoline, 58 cents for kerosene and 62 cents for No. 2 heating oil. The 62-cent quotation for heating oil represents a further 3-cent decline from previous levels and in all a reduction of 18 cents for the early December high. This tanker, a small vessel, was chartered for mid-January loading. Whether these prices are indicative of the true market is questionable, for the lack of available bottoms has reduced actual chartering to a minimum and it is known that there were offerings made last week for boats at rates equal to the previous highs. It was reported that the first British flag tanker since the outbreak of the war entered the Greater Fall River, Mass., Harbor last week with a cargo of fuel oil from Aruba.

Motor fuel also revealed a mixed appearance last week. Gasoline of 72-74 octane continued to be quoted at from 5.5 to 5.75 cents per gallon in the New York Harbor area and was said to be enjoying a satisfactory demand. The Gulf Coast gasoline market was also reported to be stronger. In contrast, however, two major companies reduced tank-car posting on branded gasoline in several New England points early in the week.

Bunker C fuel-oil demand was likewise reported as satisfactory and this report was substantiated by the report on inventories which showed stocks of residual fuel oil declined 250,000 bbl. Tank-wagon lots of residual fuel oil were reported obtainable at from 3.5 to 3.6 cents per gallon and cargoes at $1.25 per barrel, unchanged from previous levels.

Latest reports on exports of petroleum products also indicate further improvement in a market that has been substantially curtailed. The latest report of the Bureau of Foreign and Domestic Commerce on exports in November shows that foreign shipments of all refined products with the exception of residual fuel oil increased in that month. The November increase follows gains in October, indicating a possible further improvement.

Combined exports of the major refined products in November totaled 4,709,505 bbl. against 4,353,677 bbl. in October. This was an increase of 355,828 bbl. or 8 per cent. A breakdown of major-product exports for the 2 months is given in the following table (figures in barrels):

Product—	November	October
Crude oil	3,805,086	5,268,758
High-grade gasoline	346,591	104,658
Motor fuel	1,548,106	1,521,276
Kerosene	174,946	120,389
Gas oil and distillate	1,178,502	1,130,928
Residual fuel oil	803,698	872,368
Lube oils	657,662	604,058
Total	8,514,591	9,622,435

The recent sharp increase in kerosene exports is linked with improvement in the domestic market for this product. Kerosene in the New York Harbor area is reported stronger and the current quotation of 5.5 cents per gallon is well maintained.

The decline in the exports of all oils was accounted for chiefly by the marked drop in crude-oil exports. The largest proportionate increase was shown in high-grade motor fuel accounted for principally by shipments to Japan which took more than half of all exports of this material. Japan was also the major importer of lubricating oils produced in this country, taking 197,043 bbl. of our total exports of 657,662 bbl. in that month.

One cause of concern in the eastern area is the importation of fuel oil. Imports of light fuel oil for immediate consumption totaled only 185,859 bbl. in all of 1939 but since February of last year, the monthly total has fallen below that figure only twice, in May and June. In the 9 months from February to October, inclusive, the imports of light fuel oil averaged 280,000 bbl. per month. For this reason, observers believe that the eastern market will be well supplied this year and that if any exceptional strength is developed in the heating-oil market it will be in the Midwest where the effect of imported supplies will be minimized.

Major Company Purchases Strengthen Gulf Gasoline

HOUSTON, Tex., Jan. 14.—Several major companies entered the Gulf Coast market in a surprise move the past week, placing orders with independent refiners for substantial volumes of motor fuel for early shipment to the Atlantic seaboard. The total amount of material bought was not definitely determined but was sufficient to bring unquestionable stiffening to the market. This was the first spot activity in the Gulf Coast refinery market since last October, when from 20 to 25 cargoes were purchased in a similar buying spurt.

Reported purchased were at least two cargoes of gasoline in drums, supposedly for Japan, and another shipment of gasoline in drums for a Mexican destination, the latter totaling approximately 22,000 drums. Buyers still were reported in the market at the opening of this week. Rumors were being circulated that inquiries were being made for additional sizable quantities of material, both for domestic and export lifting.

Material bought the past week was said to have been obtained at bargain prices but quotations Monday were from ⅛ to ¼ cent higher than a week ago.

Some market observers feel that the buying may be only a speculative move on the part of companies to take advantage of the abnormally low Gulf prices in anticipation of prospective increase in demand during the next several months. Others look upon the activity as marking a definite turning point in the market brought on by the generally greater stability and tightening shown in the

(Continued on Page 103)

A.P.I. Weekly Refinery Statistics

Week Ended January 11, 1941

	Capacity reporting (per cent)	Total gasoline stocks (bbl.)	Residual fuel-oil stocks (bbl.)	Gas oil and distillate stocks (bbl.)	Daily crude runs (bbl.)
East Coast	100.0	18,488,000	10,859,000	15,275,000	535,000
Appalachian	91.0	3,080,000	375,000	505,000	129,000
Ind., Ill., and Ky.	90.2	15,644,000	3,085,000	4,177,000	572,000
Okla., Kans., and Mo.	76.9	7,177,000	2,017,000	1,369,000	272,000
Inland Texas	59.6	1,833,000	1,593,000	516,000	131,000
Texas Gulf	89.2	13,454,000	8,140,000	6,736,000	874,000
Louisiana Gulf	97.6	2,864,000	2,340,000	1,356,000	126,000
N. Louisiana and Ark.	51.5	534,000	450,000	319,000	42,000
Rocky Mountains	56.0	1,185,000	450,000	158,000	44,000
California	87.3	15,819,000	71,222,000	9,983,000	496,000
Total reported	86.2	80,078,000	100,531,000	40,394,000	3,221,000
Est. unreported	.....	6,250,000	1,750,000	700,000	344,000
*Est. total	.....	86,328,000	102,281,000	41,094,000	3,565,000
*Est. total previous wk.	.....	†85,530,000	†102,563,000	†42,606,000	3,600,000
*Jan. 12, 1940	.....	85,743,000	104,572,000	31,143,000	3,520,000

*Bureau of Mines. †Revised.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATE)

Week ended January 4, 1941	260,643,000 barrels
Week ended December 28, 1940	261,552,000 barrels
Week ended January 6, 1940	238,581,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

RETAIL OIL MARKETS...

Tank-wagon and filling-station prices on gasoline and kerosene furnished by larger marketing firms

Prices as of January 14, 1941

Taxes

The gasoline quotations given in the following tables include the 1½-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline: Tank wag.	Gasoline: Dlr.	Gasoline: Incl. tax	Kero. tank wag.
Chicago, Ill.	14.6	12.6	4.5	10.0
Decatur	14.6	13.1	4.5	10.0
Joliet	15.6	14.1	4.5	10.0
Peoria	15.6	13.2	4.5	10.0
Quincy	15.4	13.9	4.5	9.8
Davenport, Ia.	15.6	14.1	4.5	‡10.0
Des Moines	15.4	13.9	4.5	‡9.8
Mason City	15.8	14.3	4.5	‡10.2
Duluth, Minn.	16.4	14.9	4.5	10.8
Mankato	16.0	14.5	4.5	9.5
Minneapolis	16.0	14.2	4.5	10.4
LaCrosse, Wis.	17.0	15.5	5.5	10.4
Green Bay	17.4	15.9	5.5	10.8
Milwaukee	16.8	15.3	5.5	10.2
Detroit, Mich.	14.1	12.6	4.5	8.1
Grand Rapids	14.3	12.8	4.5	9.1
Saginaw	14.9	13.4	4.5	9.1
Evansville, Ind.	16.6	15.1	5.5	†9.8
Indianapolis	16.8	14.8	5.5	†10.0
South Bend	16.8	15.3	5.5	†10.0
Fargo, N. D.	18.2	16.7	5.5	11.6
Huron, S. D.	17.5	16.0	5.5	10.9
Kans. City, Mo.*	14.8	11.8	4.5	8.5
St. Louis*	14.7	13.2	4.5	9.6
St. Joseph	14.9	13.0	4.5	8.4
Wichita, Kans.	13.8	12.3	4.5	7.2

*State tax 2 cents, 1-cent city tax, and 1½-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off; minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective Dec. 2, 1940, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 9.0 cents; 100-149 gal., 8.0 cents; 150 gal. and over, 7.5 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-399 gal., 7.5 cents; 400 gal. and over, 7.0 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-399 gal., 7.5 cents; 400 gal. and over, 7.0 cents. Stanolex fuel oil A, 1-399 gal., 6.0 cents; 400-790 gal., 5.0 cents; 800 gal. and over, 4.75 cents. Stanolex fuel oil B, 1-399 gal., 6.0 cents; 400-799 gal., 5.0 cents; 800 gal. and over, 4.75 cents. Stanolex Bunker C fuel oil, 1-999 gal., 4.75 cents; 1,000 gal. and over, 3.75 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline: Cons'r tank car wag.	Gasoline: Dlr. vided dlr.	Gasoline: Incl. tax	Kero. tank wag.
Ohio points	16.0	15.0	5.5	*9.0

*Includes state tax of 1 cent.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline: Cons'r tank car	Gasoline: Dlr. tank wag.	Gasoline: Incl. tax	Kero. tank wag.
Atlantic City	11.00	12.60	4.5	8.1
Newark	11.00	12.60	4.5	8.1
Annapolis, Md.	12.85	14.35	5.5	9.5
Baltimore	12.25	13.75	5.5	8.75
Cumberland	13.65	15.15	5.5	10.0
Washington, D.C.	10.50	12.00	3.5	9.5
Danville, Va.	14.45	16.95	6.5	9.0
Norfolk	13.25	15.75	6.5	10.5
Petersburg	13.55	16.05	6.5	11.2
Richmond	13.55	16.05	6.5	11.0
Roanoke	14.75	17.25	6.5	11.0
Charles'n, W. Va.	14.05	16.55	6.5	12.6
Parkersburg	13.35	15.85	6.5	11.2
Wheeling	14.35	16.85	6.5	11.8
Charlotte, N. C.	16.40	15.00	7.5	10.55
Hickory	16.95	18.45	7.5	9.75
Mt. Airy	16.80	16.00	7.5	10.95
Raleigh	16.15	16.00	7.5	10.25
Salisbury	16.45	14.50	7.5	10.65
Charleston, S. C.	14.25	16.75	7.5	9.25
Columbia	15.10	17.60	7.5	(*)
Spartanburg	15.80	18.30	7.5	12.2

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland. District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at a time by hose connection, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery; 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

*Kerosene business of the company at these points now exclusively handled by dealers.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline: Cons'r tank wag.	Gasoline: Net dlr.	Gasoline: incl. tax	Kero. tank wag.
Atlanta, Ga.	14.0	14.0	7.5	9.0
Augusta	15.5	15.5	7.5	9.5
Macon	15.0	15.0	7.5	9.0
Savannah	15.5	15.5	7.5	9.0
Birmingham, Ala.	16.5	16.5	8.5	9.0
Mobile	15.5	15.5	9.5	8.0
Montgomery	18.0	18.0	9.5	10.0
Jackson, Miss.	16.0	16.0	7.5	9.0
Vicksburg	15.5	15.5	7.5	8.5
Jacksonville, Fla.	16.0	16.0	8.5	8.0
Miami	16.0	16.0	8.5	8.0
Pensacola	17.0	17.0	9.5	8.0
Tampa	16.0	16.0	8.5	8.0
Lexington, Ky.	15.5	15.5	6.5	9.0
Covington	13.5	13.5	6.5	6.0
Louisville	15.0	15.0	6.5	8.5
Paducah	14.0	14.0	6.5	8.5

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax, and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline: Cons'r tank car	Gasoline: Dlr. tank wag.	Gasoline: Incl. tax	Kero. tank wag.
Philadelphia, Pa.	12.5	13.5	5.5	10.0
Pittsburgh	13.0	15.0	5.5	10.5
Allentown	13.0	14.5	5.5	10.5
Erie	12.5	15.0	5.5	10.0
*Scranton	13.0	14.5	5.5	10.5
Altoona	13.0	15.0	5.5	10.5
Dover, Del.		14.0	5.5	10.5
Wilmington		13.5	5.5	10.0

Price basis to undivided dealers, dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline: Tank truck wag.	Gasoline: Serv. sta.	Gasoline: Incl. tax	Kero. tank wag.
San Francisco	16.5	17.5	4.5	11.5
Los Angeles	16.0	17.0	4.5	10.0
Fresno, Calif.	17.5	18.5	4.5	12.5
Phoenix, Ariz.	20.5	21.5	6.5	*17.5
Reno, Nev.	19.5	20.5	5.5	13.5
Portland, Ore.	19.0	20.0	6.5	13.5
Seattle, Wash.	19.0	20.0	6.5	13.5
Spokane	20.5	21.5	6.5	16.5
Tacoma	19.0	20.0	6.5	13.5

*Includes 5-cent state tax.

Discount to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents. To commercial consumers: On tank-wagon price; on single deliveries of 40 gal. and over, advance quantity discount extended at time of delivery, 3 cents. Service-station schedule applies on single deliveries less than 40 gal. On kerosene in tank-car, transport-truck, and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank wagon.

March 18, 1939, split dealer discount was canceled.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline: Cons'r tank car	Gasoline: Dlr.* tank wag.	Gasoline: Incl. tax	Kero. tank wag.
Albany	11.8	12.0	5.5	8.0
Met. New York	12.3	12.5	5.5	8.3
Buffalo	13.0	13.5	5.5	7.9
Rochester	12.8	13.8	5.5	8.5
Syracuse	12.5	10.7	5.5	8.9
Portland, Me.	11.4	11.8	5.5	8.4
Manchester, N.H.	12.9	12.1	5.5	9.2
Burlington, Vt.	11.6	11.8	5.5	8.6
Boston, Mass.	10.4	10.7	4.5	8.4
Worcester	11.0	11.5	4.5	8.0
Hartford, Conn.	11.3	11.5	4.5	7.9
New Haven	11.1	11.3	4.5	7.4
Providence, R. I.	10.4	11.5	4.5	8.4

*Undivided.

Effective August 8, 1940, the company changed its commercial consumer policy in New York and New England to the following:

Full compartment deliveries: Accounts buying less than 20,000 gal. annually, 0.5 cent above the commercial-consumer price; accounts buying from 20,000 to 120,000 gal. annually, commercial-consumer price; accounts buying 120,000 gal. annually and above, 0.25 cent off consumer price. Split compartment deliveries: Delivery of less than a full compartment, 250 gal., commercial-consumer price plus 1 cent. Steel-barrel deliveries: Commercial price plus 3 cents.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline: Tank wag.	Gasoline: Incl. tax	Kero. tank wag.
Denver, Colo.	14.5	5.5	10.5
Grand Junction	16.5	5.5	12.0
Pueblo	15.5	5.5	9.0
Casper, Wyo.	16.5	5.5	11.5
Cheyenne	12.0	5.5	11.0
Billings, Mont.	16.5	6.5	12.0
Butte	15.5	6.5	13.0
Great Falls	15.5	6.5	12.0
Helena	15.5	6.5	12.5
Salt Lake, Utah	16.0	5.5	14.0
Boise, Idaho	†18.6	6.5	16.0
Twin Falls	†19.6	6.5	16.5
Albu'que, N. M.	*16.0	7.0	9.5
Roswell	*14.0	7.0	8.0
Santa Fe	‡17.0	7.5	9.5

*Includes city tax of 0.5 cent. †Includes toll-bridge tax of 1 mill. ‡Includes city tax of 1 cent.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline: Cons'r tank car	Gasoline: Dlr. tank wag.	Gasoline: Incl. tax	Kero. tank wag.
New Orleans, La.	14.25	16.75	8.5	‡10.0
Baton Rouge	14.75	17.25	8.5	‡10.5
Alexandria	14.75	17.25	8.5	‡10.5
Lafayette	15.00	17.50	8.5	‡10.0
Lake Charles	14.75	17.25	8.5	‡10.0
Shreveport	14.00	16.50	8.5	10.0
Knoxville, Tenn.	18.00	20.00	8.5	12.5
Memphis	16.00	18.00	8.5	11.0
Chattanooga	17.50	17.35	8.5	12.0
Nashville	17.00	17.50	8.5	11.0
Bristol	18.25	18.75	8.5	12.0

Essolene at dealer price less 0.5 cent per gallon to undivided dealers.

‡Includes 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gal. or more in one territory take posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gal. at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less 0.5 cent per gallon. Kerosene prices include 1-cent state tax.

Effective February 24, 1939, the company reestablished in New Orleans the commercial consumer policy on motor fuel effective in the rest of the state.

Effective December 12, 1938, the company revised its commercial consumer policy on motor fuel in New Orleans, as follows: Single deliveries of less than 50 gal., consumer tank car plus 2 cents per gallon 50 to 199 gal., consumer tank car plus 1 cent per gallon; 200 gal. and over, consumer tank car plus 0.5 cent per gallon.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline: Tank wag.	Gasoline: Incl. tax	Kero. tank wag.
Texarkana, Ark.	13.5	5.5	6.0
Fort Smith	13.5	5.5	6.5
Little Rock	16.0	8.0	8.0
Muskogee, Okla.	13.5	5.5	7.0
Oklahoma City	12.5	5.5	6.5
Tulsa	12.5	5.5	6.0

Tank wagon represents price to consumers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline: Tank wag.	Gasoline: Dlr.	Gasoline: Incl. tax	Kero. tank wag.
Omaha	17.4	15.9	6.5	9.8
McCook	17.0	14.4	6.5	9.5
Norfolk	17.5	15.4	6.5	9.9
North Platte	17.8	15.5	6.5	10.2
Scottsbluff	17.4	14.5	6.5	10.8

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Texas

	Gasoline: Tank wag.	Gasoline: Dlr.	Gasoline: Incl. tax	Kero. tank wag.
Dallas, Tex.	11.5	15.5	5.5	6.0
Fort Worth	11.5	15.5	5.5	7.0
Houston	12.0	16.0	5.5	8.0
San Antonio	12.5	17.0	5.5	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	16.2
V.M.&P. naphtha	16.5
Cleaners' naphtha	15.5
Stanisol	15.5

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Canada*

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Gasoline: Tank wag.	Gasoline: Incl. tax	Kero. tank wag.
Halifax, N. S.	24.5	10.0	18.0
St. John, N. B.	24.5	10.0	18.0
Montreal, Que.	24.0	8.0	16.5
Toronto, Ont.	24.5	8.0	17.0
Hamilton, Ont.	24.5	8.0	17.0
Winnipeg, Man.	27.5	7.0	22.5
Brandon, Man.	28.0	7.0	22.5
Regina, Sask.	25.0	7.0	20.0
Saskatoon, Sask.	28.0	7.0	23.0
Edmonton, Alta.	25.9	7.0	20.0
Calgary, Alta.	23.0	7.0	18.0
Vancouver, B. C.	21.0	7.0	23.0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon prices. Discount to undivided dealers, 1 cent below tank-wagon price. In Maritime Provinces both divided and undivided dealers pay tank-wagon price.

Tank-Wagon Changes

Standard Oil Co. of Nebraska advanced the kerosene tank-wagon price 0.5 cent per gallon at McCook and Norfolk and 0.3 cent at Omaha, Neb., effective January 8.

Standard Oil Co. of New Jersey advanced the tank-wagon price of No. 2 and No. 3 fuel oil 0.4 cent per gallon December 12 in the State of Virginia. Tank-wagon price on No. 1 fuel oil was increased 0.4 cent per gallon December 16 at Norfolk, Petersburg, and Richmond, Va.

Standard Oil Co. of Indiana increased the price of kerosene 0.6 cent at St. Louis, Mo., on January 6 instead of 0.5 cent as previously reported, making the tank-wagon price there 9.6 cents per gallon.

Socony-Vacuum Oil Co., Inc., reduced the gasoline tank-wagon price 0.5 cent at Albany, N. Y. The company raised the consumer tank-car and dealer tank-wagon price 0.6 cent per gallon at Buf-

(Continued on Page 103)

PRICES OF REFINED PRODUCTS...

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of January 14, 1941

The quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04¾
63-66 octane	.04	.04¼
60 octane and below	.03¾	.04
60-62 400 grades:		
72-74 octane (regular)	.04½	.04¾
63-66 octane	.04¼	.04¾
60 octane and below	.03¾	.04

NORTH TEXAS—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04¾
63-66 octane	.04	.04¼
60 octane and below	.03¾	.04
60-62 400	.03¾	.04⅛

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04⅞
63-66 octane	.04¼	.04½
60 octane and below	.03⅞	.04¼

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
72-74 octane (regular)		.04¾
60 octane and below		.04

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04⅞
63-66 octane	.04⅛	.04½
60 octane and below	.03¾	.04⅛
60-62 400 grades:		
72-74 octane (regular)	.04½	.04⅞
63-66 octane	.04⅛	.04½
60 octane and below	.03¾	.04⅛

PENNSYLVANIA (inland refineries)—

74-76 octane (regular)		.06
72-74 octane		.05¾

CALIFORNIA (domestic movement)—

88-80 400, 65 oct. and higher	.05½	.07¼
84-58 U. S. Motor	.04½	.06¼

EAST COAST (domestic)—

U. S. Motor grades:		
New York (Bayonne)*	0.5½	.05¾
Philadelphia	.05½	.07
Boston	.05½	.06
Baltimore	.05½	.06½
Charleston, S. C.	.05¾	.06½

*All grades of gasoline ⅛ to ¼ cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
72-74 octane	.03¾	.03⅞
70-72 octane	.03½	.03¾
68-70 octane	.03¼	.03½
65-67 octane		.03¼

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.02⅜
Grade 18-55	.02¾	.02⅞

NORTH TEXAS—

Grade 26-70		.02
Grade 18-55		.02⅜

CALIFORNIA—

75-85 375-390	.04½	.05¼

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70		.02

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p., 110-flash, 540-550 e.p.	.03½	.03⅝
41-43 gr., 300-320 i.b.p., 110-125 flash, 500-520 e.p.	.03⅝	.03¾
46-48 gr., 210-230 i.b.p., 480-max., e.p.	.03⅞	.04

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

42-44	.04¼	.04⅜
41-43	.04⅛	.04¼

NORTH TEXAS—

41-43	.04	.04⅛

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.04	.04⅛

ARKANSAS (Ark. and N. La. del.)—

41-43	.04	.04¼

PENNSYLVANIA (inland refineries)—

46	.05⅛	.05½
45	.05⅛	.05⅝

CHICAGO (Based on Group 3)—

42-44	.04¼	.04⅜
41-43	.04⅛	.04¼

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.04½	.05½

NEW YORK (Bayonne, N. J.)—

41-43	.053	.055

GULF COAST (domestic)*—

41-43	.03½	.03⅝

*Barge price ⅛ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.04	.04⅛
No. 1 prime white, 38-42	.03⅞	.04
No. 1 straw, 38-40	.03⅞	.04
No. 2 straw, 32-36	.03½	.03¾
No. 3 zero to 10, 28-32	.03⅝	.03½

NORTH TEXAS—

No. 1 prime white, 38-42	.03¾	.03⅞
No. 1 straw, 38-40	.03⅝	.03¾

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2, 32-36	.03½	.03⅝

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.03½	.03⅝

CHICAGO (Based on Group 3)—

Range oil	.04	.04⅛
No. 1 prime white, 38-42	.03⅞	.04
No. 2 straw, 32-36	.03½	.03¾
No. 3 zero to 15, 28-32	.03⅝	.03⅞

NEW YORK (Bayonne, N. J.)—

*No. 1	.053	.055
*No. 2	.047	.049
*No. 4	.047	.049

*Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil, under 35	.03⅛	.03¼
No. 5, low pour point, 18-22	.75	.80
No. 6, 15 and above, 8-14	.60	.65

NORTH TEXAS—

U.G.I. gas oil, under 35	.03	.03⅛
No. 5, low pour point, 18-22	.75	.80
No. 6, 15 and above, 8-14	.60	.65

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial		.70

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.03⅛	.03¼
No. 5, low pour point, 18-22	.75	.80
No. 5, 15 and above, 18-22	.60	.70
No. 6, low pour point, 10-16	.60	.70
No. 6, 15 and above, 8-14	.60	.65

PENNSYLVANIA (inland refineries)—

36-40	.04½	.05

CALIFORNIA—

Los Angeles:

30-40 gas oil, per bbl.	1.10	1.25
24 plus diesel, per bbl.	1.10	1.25
24 plus diesel (bunkers)	1.20	1.35
12-16 (bunkers at tidewater)	.65	.75
10-16 (cargo lots)	.65	.75
12-17 (tank cars)	.60	.75
10-17 (high sulfur)	.50	.65

San Joaquin Valley:

10-18 (tank cars)	.55	.70
24 plus diesel, per bbl.	1.10	1.25

San Francisco:

24 plus diesel, per bbl.	1.35	1.40
24 plus diesel (bunkers)	1.40	1.50
10-16 (bunkers)	.75	.80

GULF COAST—

No. 2 fuel	.03⅛	.03¾
43-47 diesel	.03⅛	.03¼
48-52 diesel	.03⅛	.03⅝
53-57 diesel	.03½	.03⅞
48-and-above diesel	.03⅝	.03¾
Diesel bunkers		1.50
Bunker C (bulk cargoes)	.75	.80
Bunker C (bunkers)		.80

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil		.05
28-30 diesel (lighterage 6¼c per bbl.)		2.00
28-30 diesel (tank cars)	.047	.049
Bunker C (to ocean-going ships in N. Y. Harbor		1.25
Industrial fuel (tank cars)		.046

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

200-210 D, 10-25		.18
150-160 D, 0-10		.13½
150-160 D, 10-25		.13
100-110 D, 0-10		.13
100-110 D, 10-25		.12½
Steam refined:		
600 dark green (untreated)		.07

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):

10 pour point		.14½
15 pour point		.13½
25 pour point	.12	.13
Steam refined:		
600		.08
650	.08	.08½
600 flash	.09	.09½
630 flash	.11	.12

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:		
150-3		.08
180-3		.08½
200-3		.08½
250-3		.10
280-3		.10½
280-4		.10
300-3½		.11
350-3½		.11½
400-3½		.12
500-3½		.12½
600-3½		.13
100-2½ paraffin oil, 10-25		.05¼
10-25 pour point:		
200-3		.08
250-3		.09½
280-3		.10
280-4		.09½

GULF COAST—

Pale oils:		
100-3	.05⅛	.05¼
200-3	.07⅛	.07¼
300-3	.07½	.07⅝
500-3½	.08¼	.08½
750-3½	.08⅝	.08⅞
1,200-3½	.08¾	.08⅞
2,000-4		.09
3,000-4		.10½
Red oils:		
200-5-6	.06⅞	.07
300-5-6	.07¼	.07½
500-5-6	.08	.08¼
750	.08⅜	.08½
1,200-5-6	.08½	.08⅝

CALIFORNIA (moving to dom. market)

Pale oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07½	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis., at 70° F., 3 color, 400-405 flash:		
Zero pour point		.22½
10 pour point		.21½
15 pour point		.20½
25 pour point	.19	.20
200 vis., at 70° F., 3 color:		
Zero pour point		.24½
10 pour point		.23½
15 pour point		.22½
25 pour point	.21	.22

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale	.02½	.02¾

PENNSYLVANIA (inland refineries)—

122-124 (A.m.p.) w.c. scale		.02¾
124-126 (A.m.p.) w.c. scale		.02¾

NEW YORK—

Wax in bags fully refined:		
125-127 (A.m.p.) wax		.0500
128-130 (A.m.p.) wax	.0560	.0570
130-132 (A.m.p.) wax		.0585
133-135 (A.m.p.) wax		.0615
135-137 (A.m.p.) wax		.0640
Crude scale:		
124-126 (A.m.p.) w.s.		.02¾
124-126 (A.m.p.) y.s.		.02¾
Petrolatum in barrels, carload lots:		
Dark green	.02125	.02625
Amber	.02375	.02875
Extra amber	.02625	.03000
Lily white	.04375	.05125
Snow white	.05125	.06000
Cream	.03375	.04125

Export Prices

GASOLINE

GULF COAST—

U. S. Motor		.03¼
60-62 400	.03¼	.04
61-63 390	.03¼	.04½
64-66 375	.03¼	.04¼

LOS ANGELES—

U. S. Motor grades:		
Above 69 octane	.05½	.05¾
65-69 octane	.05¼	.05½
60-65 octane	.04½	.05

KEROSENE

GULF COAST—

41-43 water white	.03⅝	.03¾

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s. in bbl.)—

Cylinder stocks:		
600 S.R. unfiltered		.16½
630 S.R. unfiltered		.17
600 flash, S.R.		.18
650 flash, S.R.		.20
Bright stock:		
Light, 25 pour point		.20½

NEUTRAL OIL

200-3 color		.27
150-3 color		.25½

PARAFFIN WAX

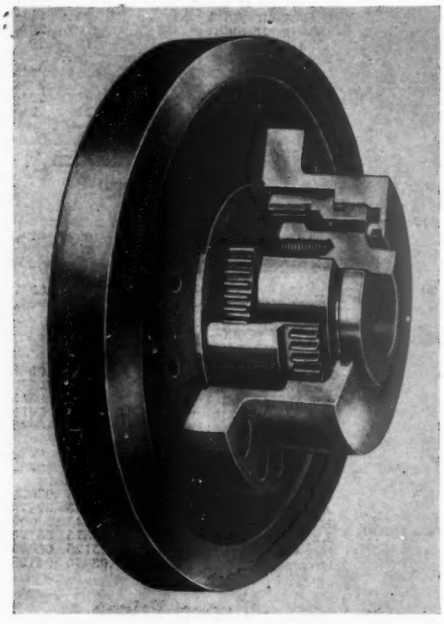
NEW YORK (prices per lb.)—

123-125 A.m.p.		.0560
125-127 A.m.p.		.0560
128-130 A.m.p.		.0585
133-135 A.m.p.		.0615
135-137 A.m.p.		.0640
Crude scale:		
124-126 w.s.		.02¾
124-126 y.s.		.02¾

EQUIPMENT PROGRESS...

Manger Coupling Gives Flexibility With Less Axial Clearance

To save space and at the same time secure full flexibility—a necessary combination in certain applications—the Manger flexible coupling has been designed and developed by Farrel-Birmingham Co., Inc., Buffalo, N. Y. For connecting a shaft directly to a flywheel, brake drum or flange the Manger coupling provides complete flexibility with approximately one-half the axial clearance required by other types of couplings.



The Manger coupling is equally applicable for connecting two free-ended shafts in combination with a solid, flanged, half coupling, which gives a remarkably close-coupled connection. When two units are coupled to a single driver with this coupling it is possible to operate one unit by unbolting the coupling and drawing back the outer sleeve on the unit which is not to be used.

In the Manger coupling, compensation for misalignment is made by an internal sleeve which floats between an externally geared hub and an internally geared covering sleeve. The internal sleeve, which engages the hub and outer sleeve, is free to slide and rock, adjusting perfectly for differences in alignment. The driving member of the coupling can be either the geared hub or the covering sleeve.

Gear teeth are accurately generated on Farrel-Sykes machines. External teeth are crowned, which gives full freedom to the floating sleeve within the design limits of the coupling. Compensation is provided for offset, angular and combined misalignment without resistance to free lateral float of the connected shafts. Contact areas are large and heavy oil lubricating the contact surfaces provides a cushion against shock without using flexing materials.

TRADE LITERATURE

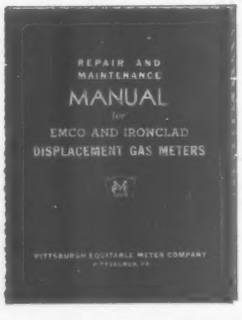
CHAPLIN-FULTON MANUFACTURING CO., 28-40 Penn Avenue, Pittsburgh, Pa.—Bulletin 130, a 12-page booklet describing its line of regulators for compressor control. Products described are its Type 130 weight and lever-operated regulator (sizes ¾ to 6 in.) for constant-speed pumps with discharge pressures up to 150 lb.; the Type 130-S spring-operated regulator in sizes from ¾ to 4 in.; Type 130-PS, a pilot-operated regulator in sizes ¾ to 6 in.; Type 131 throttling regulator for discharge pressures up to 125 lb., weight and lever-operated in 1 to 12-in. sizes and the pilot-operated Type 131-PS available in sizes 1 to 6 in.

MONSANTO CHEMICAL CO., 1700 South Second Street, St. Louis, Mo.—Bulletin P-115, a 20-page bulletin, "The Aroclors," describing and giving physical properties of this group of products manufactured exclusively by Monsanto. Aroclors have been used as flame-retarding ingredients, plasticizers, as a thermostat-control medium, softeners, solvents, solid plastics, lubricants, adhesives, organic pigments, lacquer ingredients, and for many other purposes. It is possible that still further uses will be suggested by the information made known about the Aroclors in this booklet.

LINK-BELT CO., Indianapolis, Ind.—Catalog 1775, an 88-page data book for the aid of all who have occasion to use, recommend, and buy bearings and other power-transmission equipment. Pages 1 to 10 show why Link-Belt has seen fit to discard the conventional negative "antifriction bearings," and instead call them by the more positive term, "Friction Fighter Bearings." Unmounted bearing units also are covered. Complete tables of sizes, dimensions, weights, and list prices are given. Then there are tables of load ratings and minimum life expectancies. A number of pages are devoted to the selection of the proper unit for each class of service. Catalog is free upon request addressed on company or business letterhead.

Emco Issues New Meter-Maintenance Manual

A publication, "Repair and Maintenance Manual for EMCO and Ironclad Displacement Gas Meters" has been issued by Pittsburgh Equitable Meter Co. This manual contains 80 pages of text and large, clear illustrations. It is printed on high-grade book paper, is wire-bound to open flat and has a heavy "nonsoil" black cover, printed in gold.



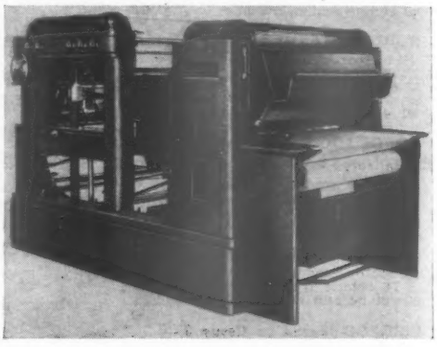
The text matter was prepared by the EMCO engineering department and is written in nontechnical language. Over 80 photographs were made especially for the purpose of providing the users of Ironclad No. 1 and EMCO domestic and large-capacity cast-iron and pressed-steel meters with a means for obtaining the ultimate in value from their metering dollar.

Meter repairmen will find this book invaluable, since the latest and most efficient methods of renewing the life of Ironclad and EMCO cast-iron and pressed-steel meters are so completely described and illustrated. The text matter explains fully the use of jigs developed to simplify the reconditioning of these meters. Ways and means of adjusting and proving meters after necessary maintenance work has been completed is covered in an interesting chapter. A complete set of prover tables, showing percentages of error, as well as a table for changing percentage of error to percentage of correction, is reduced.

Since the manual is of value primarily to those who have occasion to perform actual work on Ironclad and EMCO meters, the distribution is being limited to meter shop foremen, distribution superintendents and measurement engineers. To receive a copy of this valuable and interesting manual, requests should be addressed to the Pittsburgh Equitable Meter Co., 400 North Lexington Avenue, Pittsburgh, Pa.

Popular Demand Produces New Blueprinting Machine

The latest addition to the C. F. Pease Co. family of streamlined continuous blueprinting machines is Model 22-16. This equipment is the result of the popular demand on the part of commercial blueprinters, industrial plants, and government departments whose production requirements are such that they do not require the high speed of Model 22, but do want the Model 22 printer's exclusive features. The "22-16" combination consists of a Model 22 printer operating



in conjunction with a Model 16 washing and drying machine.

Although the 24-ft. per minute actual printing speed of the Model 22 printer exceeds the 15 ft. per minute washing and drying speed of the Model 16 washer and dryer, only large prints can be fed at extreme speeds. Incidentally, with the Model 22 printer slow blueprint paper can be used, thus producing better and more permanent prints.

A few of the outstanding Pease Model 22 features are sliding contact which smooths out all inequalities present in all tracings and gives 24¾ in. of uninterrupted exposure area; three-speed lamp control which allows the lamps to be operated on 10, 15, or 20 amp. as desired, avoiding frequent dryer heat changes because the mechanical operating speed remains the same, the lamp amperage varying according to the tracing being reproduced; and Actinic arc lamps which furnish uniform light emission, burn 45 minutes without interruption and resume instantaneously.

Model 22-16 produces uniform, contrasting prints with clean-cut, sharp lines at an exceptionally low cost per square foot. It is manufactured by the C. F. Pease Co., 2601 West Irving Park Road, Chicago.

New High-Test Flux-Coated Bronze Welding Rods

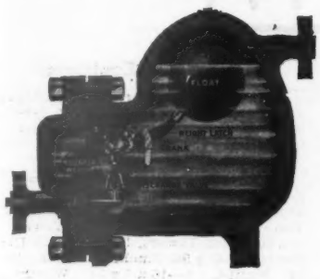
An outstanding new high-test flux-coated bronze welding rod has recently been announced by Air Reduction, New York. It offers eight outstanding advantages for bronze-welding operations: (1) Low fuming, (2) applies faster, (3) denser deposit, (4) increased tensile strength, (5) greater bond strength, (6) increased hardness of deposit, (7) materially improved ductility, and (8) time saving.

Each of these qualities is an asset that every experienced buyer will appreciate. Time formerly lost in removing a bare rod from the molten puddle and dipping it into a flux can is time saved when Airco high-test flux-coated bronze welding rods are used. The flux adheres splendidly in shipment and in use. It will not fall off when the rod is excessively bent.

For those who prefer a bare welding rod, the same outstanding flux is available in a liquid paste form.

New Model High-Pressure Trap Announced by Nicholson

A new model high-pressure, weight-operated trap for steam, air or gasoline has been announced by W. H. Nicholson & Co., 12 Oregon Street, Wilkes-Barre, Pa.



This Model C trap is available with ½, ¾ or 1-in. connections, for pressures ranging 500 to 1,500 lb. and a maximum total temperature of 1,000° F. It is furnished with Series 60 American standard raised-face inlet and outlet flanges for pressures up to 600 lb., Series 150 American raised-face flanges for pressures of 600 to 1,500 lb. with American standard male-and-female or tongue-and-groove flanges furnished if desired.

The Model C trap meets all requirements of modern high-pressure power plants and refineries, and are recommended for draining headers, line purifiers, separators, superheated drains, turbine throttle-valve drips, stop and check valves, pressure-reducing valves, accumulators, and afterabsorbers.

In its operation, water entering the trap raises the float to its highest point of travel, where it releases the weight latch, allowing the counterweight to fall. The counterweight is attacked to a crank which lifts the discharge valve wide open instantaneously. The discharge valve is then held wide open by the link latch until the discharging water carries the float to its lowest point of travel. At this point the weight latch again engages the counterweight, which has been lifted by the falling float, and the link latch disengages, permitting the discharge valve to close instantaneously. Wire drawing of valve and seat is entirely prevented by this intermittent, rapid opening and closing of valve.

Although utilizing a float which is necessary to its action, the trap is not what is commonly termed a "float-operated trap." The float is instrumental only in releasing the counterweight, which, as it falls, opens the discharge valve. Opening and closing of the valve does not depend upon the buoyancy or weight of the float as is the case with most bucket-and-float types of traps.

Clearance Chart for Rubber Proctectors Now Available

The most complete clearance chart ever developed to show the area between rubber protectors and casing in relation to the internal area of tool joints, has been developed by Patterson-Ballagh Corp. All types and sizes of drill pipe are charted, as are all sizes of protectors, giving the outside diameter of the protector on pipe, the exact clearance between protector and casing, and other data desired by the drilling engineer. Several thousand calculations were necessary in its development. The chart has been reproduced in convenient bulletin form and a copy may be obtained by writing to Patterson-Ballagh Corp., 1900 East Sixty-fifth Street, Los Angeles, Calif.

Torpedo Firm's Employes Busy

Oil-well shooters employed by the Mid-Continent Torpedo Co., Tulsa, are given full-time work now that the company has opened a manufacturing division. When they are not busy in the field, they work in the shop making firing heads, casing squids, and torpedo shells.

Business of Mid-Continent has shown a rapid growth. motorized equipment now including three shooting trucks and two field cars. Frank Hengst is president of the company, with offices at Mohawk Drive and Peoria Avenue. C. H. Buck is field superintendent for the company, which is successors to Kinley Co.

AMONG EQUIPMENT MEN...

"Bert" Sutherland Joins Chaplin-Fulton Co.

A. D. Sutherland, lately and for some years connected with the company of Lee C. Moore as sales manager for its eastern territory, has been engaged by the Chaplin-Fulton Manufacturing Co. as sales engineer in the marketing of their pressure-control equipment.

Mr. Sutherland is well known to users of such equipment, especially in the oil and gas industries, in which he has been employed since 1910, with the exception of 1 year spent over seas during the World War. Starting as a tool dresser in Oklahoma, he participated in one capacity and another during the gas boom of the Cleveland field in Ohio and the later one of the McKeesport, Pa., field. He was for a time employed as a salesman for the supply house of Frick & Lindsey, in which connection he made many friends. His new duties with Chaplin-Fulton begin in January.

A. R. Weis Elected Director of Dresser Manufacturing Co.

A. R. Weis, president and general manager of the Pacific Pump Works, Los Angeles, Calif., has been elected to the board of directors of the Dresser Manufacturing Co., Bradford, Pa., according to an announcement made by H. N. Mallon, president. Mr. Weis has been identified for many years with the development of heavy-duty centrifugal pumps for power plants and oil refineries. He became president of the Pacific Pump Works, a wholly owned subsidiary of Dresser Manufacturing Co., October 1940, after serving as vice president and chief engineer for the company's organization in 1924.

Pacific Pump Works manufactures Pacific centrifugal pumps for municipal, industrial, refinery, pipe line and hot-oil service, deep-well centrifugal turbines and deep-well oil pumps. Dresser Manufacturing Co., the parent company, manufactures Dresser pipe couplings and pipe-line repair devices. Clark Bros. Co., of Olean, N. Y., manufacturers of compressors and gas engines, and Bryant Heater Co. of Cleveland, Ohio, manufacturers of gas heating and air-conditioning equipment, are also subsidiaries of Dresser Manufacturing Co.

BUSINESS NOTES

W. W. Foster of the Foster Cat Head Co., Wichita Falls, Tex., is leaving this week for an extended trip through the California oil fields.

K. S. Richards, distributor for Atlas Imperial diesel engines in Fort Worth, Tex., effective January 1 consolidated its various warehouses and removed its office to a new plant located at 840 West Vickery, Fort Worth.

Black, Sivalls & Bryson, Inc., of Kansas City, Mo., and Oklahoma City, Okla., recently opened an office at 30 Rockefeller Plaza, New York, to handle local sales and service on B. S. & B. safety-head pressure-relief devices, B. S. & B. welded tanks and pressure vessels, special purpose valves, and B. S. & B. wood and bolted steel tanks. T. S. Murphy is in charge of the New York office. Mr. Murphy has a background of several years in the engineering department of Black, Sivalls & Bryson and was chosen for the New York post because his engineering training is such that it will enable him to give valuable service to the chemical and processing plants in the East.

Robert L. Lerch was appointed general sales manager of Haynes Stellite Co., unit of Union Carbide & Carbon Corp., effective December 1, 1940. Mr. Lerch has been associated with Haynes Stellite since 1924 and since 1929 has been advertising manager and assistant to the general sales manager.

Pat S. Lewis to Represent Wylie-Stewart in Tulsa

The Wylie-Stewart Machinery Co. of Oklahoma City, Okla., announce the opening of an office in Tulsa; it will be located at 310 Thompson Building. The company handles pipe line and oil-field equipment manufactured by such manufacturers as American Fork & Hoe Co.; Stover, Waukesha and Murphy engines; Jaeger Machine Co.; American Steel Manufacturing Co.; New York Belting Co., and Sullivan Machinery Co. Wylie-Stewart will be represented by Pat S. Lewis who has been working in the equipment end of the pipe-line industry at Tulsa throughout the past 10 years.

C. D. St. Clair Appointed New Hancock Works Manager

Manning, Maxwell & Moore, Inc., Bridgeport, Conn., makers of pressure gages, safety valves, thermometers, and globe valves, has announced the appointment of Clinton D. St. Clair as works manager of their Hancock Valve division plant in Boston.

Mr. St. Clair attended Purdue University and Pennsylvania State College. Since then, he has had 22 years of manufacturing experience with such prominent industrial organizations as B. F. Goodrich, Ohio Match Co., Erie City Iron Works, and American Machine & Metals, Inc. His duties for the past 15 years have been similar to those of his present capacity, and especially fit him for his new work.

Putnam Made Assistant Manager Of Oklahoma Division by National

H. L. Putnam, division sales manager for National Supply Co. at Fort Worth, Tex., since 1939 has been transferred to Tulsa as assistant division manager of the Oklahoma division.

Mr. Putnam has been affiliated with the National Supply organization since 1929 when he joined the company's sales staff at Torrance, Calif. In 1934 he was placed in charge of engine sales on the Pacific Coast and continued in this capacity until his transfer to Houston, Tex., in 1937 to engage in sales work in the Texas and Gulf Coast areas. In May 1938 he assumed charge of National's sales staffs in Texas as division sales manager and continued in this position until his recent appointment.

CLASSIFIED ADVERTISING

THE MARKET PLACE OF THE OIL INDUSTRY . . .

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Experience in Oil Equipment
323-324 Insurance Bldg., Fort Worth, Tex.
212 Kellogg Building, Washington, D. C.

Leases and Drilling Blocks

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

NEW MEXICO
STATE OIL AND GAS LEASES
Another block in a NEW HOT SPOT. This is a good bet. Buy direct and save those dollars. No middle man to pay; no salesmen to bother you. Better buy a little of something, than a whole lot of nothing.
HARRY S. WRIGHT
New Mexico State Lessee
Farmington, New Mexico

FOR SALE Oil and gas leases and small production located in Kentucky shallow field, also tracts of proven Fluorspar and zinc deposits. Reports on request. W.P. HARLEY, Bowling Green, Kentucky.

NEW MEXICO
Oil and Gas Leases and Royalties
ROY G. BARTON. Hobbs, N. M.

HOMER L. FITCH, GEOPHYSICIST AND LOCATION ENGINEER
WHY drill dry holes? Our method only locates structures which contain oil or gas. Drawer 711. Brownsville, Texas.

3000 A. near Cities Service Pool, Phillips County, Kans. For leases or royalty write J. D. SEARCH, Logan, Kansas.

MISSISSIPPI
SALESMEN, BROKERS, Cheap Lands in fee with all mineral rights in well located counties where Major companies have large lease holdings. Write Box 754, Jackson, Mississippi.

FOR lease the SW ¼ 9-17-15, Barton Co. The land is one and one-half miles from production. Owner Louis Seidl, Box 86, Otis, Kans. Price $2 per acre.

Geophysical Service

THE Gravitational Selector, 14957 Lakewood Heights Boulevard, Lakewood, Ohio, offers to help make this your Lucky Year in producing Oil and Gas. Why not stop guessing? Use this scientific method to locate your structures and wells. Our last three predeterminations are making 120, 200 and 500 barrels respectively in a state where dry holes are the rule. Use our system and you will start the year right and end it a more prosperous man.

Business Opportunities

NEED SALES REPRESENTATION? Can handle few more outstanding oil-field trade items. Fine clientele. Box A-282, The Oil and Gas Journal, 617 Petroleum Bldg., Fort Worth, Texas.

FOR SALE: Controlling interest approximately for hundred thousand in profitable oil production and gasoline plants. Opportunity. Box A-321, The Oil and Gas Journal, Tulsa, Okla.

Situations Wanted

CHIEF CHEMIST—Process Supervisor. M. I. T. graduate. Experienced in manufacture of gasoline, lube oils, greases, asphalts, waxes, specialties. Fifteen years' experience. Address Box A-300, The Oil and Gas Journal, Tulsa, Oklahoma.

GRADUATE PETROLEUM ENGINEER With ten years' experience in production and sales work wants connection with a producing company or a major servicing or supply company. American, 35 years old.
Box A-310
The Oil and Gas Journal
Tulsa, Okla.

SUPERINTENDENT, Process Engineer, Efficiency Engineer, chemist, 20 years work majors, familiar with cracking, reforming, poly, treating lubes. Proven technical and administrative ability. Competent to analyze and recommend changes to reduce operating and maintenance costs and increase efficiency. Box A-320, The Oil and Gas Journal, Tulsa, Oklahoma.

Help Wanted

WANTED
S A L E S M E N
Geophysical Experience Desirable.
GEOLOGICAL SCIENTIFIC SERVICE CO., INC.
Sinclair Building
FORT WORTH, TEXAS

Legal Blanks

BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo. Neb. N. Dak. Tenn. Wyo. Free catalog samples on request. Burkhart Ptg. & Sta. Co., 115 S. Cinn., Tulsa, Oklahoma.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

Royalties

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma

Brokers—Salesmen

Sell in the most active area in the United States—The Permian Basin of West Texas and Southeastern New Mexico. From the standpoint of royalty investors this area has much to offer. Can supply you with choice non-producing royalties located on geophysical highs. Also drilling blocks, close in acreage to production, or wildcat leases. I maintain my own field men who cover this area for me. All offerings meet the requirements of the Security and Exchange Commission. Iquiries invited.

B. D. BUCKLEY
Paul Brown Bldg., St. Louis, Mo.

WILL buy small or large producing oil royalty interests in Okla., Texas or New Mexico. Oscar L. Grimes, Tulsa Loan Bldg., Tulsa, Okla.

Survey Service

REMEMBER EAST TEXAS
"When all other methods fail, employ my divining or dowsing method. If oil exists this method finds it. Faults, broken treacherous areas accurately defined. Our Watson #2 first producer Wilmington, Calif., field, located by this method. Not theoretical prognostications. Approximate depths and thickness of sands given. I own production. Information to prospective operators, only. George Miller, 1548 Post, Torrance, California."

Incorporations

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

CAPITAL SEEKERS
Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan.

For Sale—Equipment

FOR SALE: At Bartlesville, Oklahoma, 1—50 HP Kewanee locomotive type boiler with stack 150# WP. Will pass state inspection. $200.00. I. T. I. O., Bartlesville, Okla.

FROM REFINERY equipment we offer 1—ten thousand barrel riveted tank, 2—Scotch Marine Boilers, 2—6' x 40' Bubble Towers, 1—5' x 51' Bubble Tower, 2—5' x 40' Flash Towers, 300—4" Still Header Boxes, 1—6' x 96' Smoke Stack, 2—18 x5 x 18 Pumps, 1—10 x 6 x 24 Worthington Simplex Hot Oil Pump, 1—22 x 36⅝ x 6 x 24 Wilson Snyder Duplex Hot Oil Pump, 3—85 HP Diesel Engines, 1—Cracking Furnace, brick, castings, and structure, 1—Exhaust Steam Heater.
Box 1011 — Mt. Pleasant, Texas.

FOR SALE: At Oklahoma City 2—set slightly used 6½" Spang Weldless drilling jars 4½" stroke 3¼"—4¼" box and pin, $100.00 per set. I. T. I. O., Bartlesville, Okla.

FOR SALE—$300 EACH
6 Good 12" x 12" Twin Steam drilling engines, Ideals—Luceys—Johnsons.
LUCEY PRODUCTS CORPORATION
Tulsa, Okla.

FOR SALE: In Oklahoma City field 50—1000 barrel BS&B VP used oil storage tanks, Cheap. I. T. I. O., Bartlesville, Oklahoma.

FOR SALE—Gasoline Plant Equipment. Bessemer Engines & Compressors, large stock of pipe, pumps, tanks, meters, etc. Gilbert Pipe & Supply, Electra, Tex.

FOR SALE: 1—No. 28 Star steam drilling machine 60' mast serial C 507, less tools, located near Wynona, cheap. I. T. I. O Co., Bartlesville, Okla.

TANKERS
DRY DOCK; wood, 10,000-ton D.W.T.
DREDGE: hydraulic, for approx. 18" to 24" section line.
TUGS & BARGES; ocean.
IRON & STEEL PRODUCTS, INC.
13412 S. Brainard Ave., Chicago, Illinois
'Anything containing IRON or STEEL'

FOR SALE: At Wynona, Oklahoma—1 Twin and 2 Single Cooper gas engine type "S" compressor units with double acting cylinders. I.T.I.O. Company, Bartlesville, Oklahoma.

FOR SALE: 30 x 50 x 12 Iron Wood Frame Building, 20-hp. motor, line shaft, pulleys, belt, 3 x 7 I-beam, hand pipe tools, and roll top desk. Bargain price to clean up. A. D. Elliott, Depew, Okla.

FOR SALE: 4—OCS Roller Bearing Chain Driven Sand Reels. I. T. I. O., Bartlesville, Okla.

SWAN UNDERREAMER
6⅝" (undersized) Regular Type Swan Underreamer. Dimensions about half way between those of a 6¼" and a 6⅝" Reamer. 6⅝" 24# Cutters fit this body and tool is mechanically OK. Cheap price to anyone needing this size. The Bridgeport Machine Company, Wichita, Kansas.

FOR SALE: At Oklahoma City—9—80 HP 180 RPM 2 cycle type "10" Bessemer Engine Compressor units with tandem cylinders. I.T.I.O. Company, Bartlesville, Oklahoma.

HERCULES power unit, 4 cylinder, 4-in. x 5-in., in excellent condition. Also Caterpillar unit 3⅝ in. bore. Both units complete and ready to go.
MIDLAND PARTS & BEARING CO.
Irving, Kansas.

FOR SALE: At our Oklahoma City warehouse slightly used Cardwell KS DHS skid type oil well servicing unit equipped with DHK Waukesha motor. I. T. I. O. Co., Bartlesville, Okla.

CATEPILLAR DIESEL ENGINE
Type D-8800, 4-cylinder, full diesel, rated at 80 h.p. at 850 r.p.m. Equipped with gasoline starting engine and all standard equipment. Used on Draw Works for drilling of one shallow Illinois well since having been completely reconditioned by factory service station. Very attractive price, f.o.b. Wichita, Kansas. The Bridgeport Machine Company.

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	*$1.05*	*$1.80*	*$2.55*	*$3.30*	*7 Lines*	*$2.45*	*$4.20*	*$5.95*	*$7.70*
4 Lines	*1.40*	*2.40*	*3.40*	*4.40*	*8 Lines*	*2.80*	*4.80*	*6.80*	*8.80*
5 Lines	*1.75*	*3.00*	*4.25*	*5.50*	*9 Lines*	*3.15*	*5.40*	*7.65*	*9.90*
6 Lines	*2.10*	*3.60*	*5.10*	*6.60*	*10 Lines*	*3.50*	*6.00*	*8.50*	*11.00*

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes.

1 Inch ..... 1 time $5.00
1 Inch ..... 13 times ..... 4.50 per inch
1 Inch ..... 26 times ..... 4.00 per inch
1 Inch ..... 52 times ..... 3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

FOR SALE

One gasoline drilling rig with two 85 H.P. Waukesha motors and unitized draw works complete.

300 sets 3" A.P.I. tool joints.

10,000 Ft. 7" O.D. 26# seamless casing, once run.

15,000 Ft. 4½" O.D. seamless drill pipe equipped with both regular and full hole tool joints.

In addition to the above we have 20,000 Ft. of 6" screw line pipe in Oklahoma; also drilling rig capable of drilling to 6500 feet, complete stock of line pipe, casing, drilling and pumping equipment.

Wire, Write or Phone for Prices

Louisiana Iron & Supply Co.
Shreveport, La.

TRACTORS

Caterpillars, crawler type, size "35" $375; size "65" with nigger head winch $750; Caterpillar RD8 with Letroneau bulldozer, $2060; and Allis-Chalmers, Model L with Baker bulldozer $1850. Perfect condition. O. C. Evans, Mount Sterling, Kentucky.

FOR SALE — At Oklahoma City — 11 6" and 8" Byron-Jackson built-in motor pump heads for use in operating deep-well turbine pumps. I. T. I. O. Company, Bartlesville, Oklahoma.

CHEAP ROTARY DRILLING ENGINE

12" x 12" Ideal semi-enclosed plain bearing twin cylinder steam engine, on steel skids and complete with chain guard and balanced throttle control. Very low price, f.o.b. Odessa, Texas. The Bridgeport, Machine Company, Wichita, Kansas.

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.

Terms to suit.

CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St., Cincinnati, Ohio

FOR SALE: At Oklahoma City—1 Toledo electric power drive complete with 60 cycle single phase 110-volt A.C. motor. I. T. I. O. Company, Bartlesville, Oklahoma.

PUMPING UNIT ENGINE

Model VIKU Waukesha, 4-cylinder, 50-h.p. at 1400 r.p.m. engine with standard equipment. Has been reconditioned. Fully guaranteed. Dozens of same type sold by us. Every one satisfactory. Only the one left. The Bridgeport Machine Company, Wichita, Kansas.

LANDIS Pipe machine head, capacity 4" to 8" oilfield length threads; 2 sets dies. Also 6" to 12" head standard length threads. Murray-Baker-Frederic, Inc., P. O. Box 1282, Shreveport, La.

WANTED TO BUY

All Sizes Storage Tanks—Wood or Steel Roof—10,000 bbl. to 80,000 bbl.
Abandoned Plants—Natural Gasoline, Oil Refineries, etc.
Send us lists of your surplus material and equipment

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry and H. J. Galamba
Riverview at Second, Kansas City, Kansas

Robt. W. Duden
2100 S. Union, Tulsa, Oklahoma

For Sale—Equipment

FOR SALE—At Seminole, Oklahoma—1 8' diameter X 26' gasoline steel storage tank. I. T. I. O. Company, Bartlesville, Oklahoma—$200.00.

FOR SALE

ANY QUANTITY

NEW SEAMLESS STEEL COUPLINGS

750—13" O. D. (12½" Pipe) 8-V Thread x 8¼" long, Line, at $1.35 each.
3000—1¼" Black Merchant Forged Steel, at 4c each.
2500—1½" Black Merchant Forged Steel, at 5½c each.
6000—1¾" Galv. Merchant Forged Steel, at 5¼c each.

RECONDITIONED PIPE

30,000 feet 12", 50 lb. at $1.25 per foot.
80,000 feet 6" Std. at 38c per ft.
All of the above F.O.B. Philadelphia District, subject to prior sale. Pipe in lengths 18'0" and longer, plain ends.

EASTERN PIPE SUPPLY COMPANY
1424 N. NINTH STREET
PHILADELPHIA PENNA.

FOR SALE: At Oklahoma City — 1 Brauer shale separator, steam operated. I. T. I. O. Company, Bartlesville, Oklahoma.

GENERAL SERVICE STEAM PUMPS

Two 7" x 3" x 8" Worthington steam pumps mounted as a unit on steel skid base with an Inferno Boiler Firing Control and provision for installation of Electric Generator. Price for entire unit, $300.00 f.o.b. Odessa, Texas. The Bridgeport Machine Company, Wichita, Kansas.

FOR SALE: 1—Ideco Portable Standard Rig suitable for drilling, pumping, or servicing, complete less motor. I.T.I.O., Bartlesville, Okla.

For Sale—Equipment

USED OIL TRUCKS

Mack—Diesel train—6300 Gallons.
Diamond T—6 wheeler—3000 Gallons.
Diamond T—6 wheeler—1500 Gallons.
International—Completely equipped —1200 Gallons.
International A7F—10 to 15 ton—6 wheeler.
Diamond T Model 1600—10-12 tons 6 wheeler.
Diamond T Model 1203—10 ton—6 wheeler.
Diamond T—6 wheeler—2600 Gallons.
Fruehauf Trailer — 3000 Gallon tank.

National Truck Sales, Inc.
3315 Archer Avenue, Chicago, Ill.

FOR SALE: At Bartlesville 1—2A National Portable Drilling Machine Less Tools. I. T. I. O. Co., Bartlesville, Okla.

MECHANICAL DRILLING RIG

Complete drilling rig with drill pipe, tools and everything needed to go to work. Model RL Cardwell draw works powered with GAK-6 Waukesha motor; No. 14-P 7¼x14" Oil Well power slush pump, powered by EK-6 Waukesha motor; full hole drill pipe; wire lines; drilling tools and fittings. Rig finishing up well now. Can be released almost immediately. Located in Gallatin County, Illinois. Excellent outfit for Illinois Basin or similar work. The Bridgeport Machine Company, McLeansboro, Ill., or Wichita, Kans.

40 HP 2 cycle Superior Gas Engines complete with Reverse Clutches or OCS Countershaft, completely reshopped; 25 HP 4 cycle Superior Engine and 8 x 8 I.R. Compressor. Also spare Flanged Fly Wheels, cylinders, crankshafts, etc., for Superior Engines. For immediate delivery from Tulsa and Seminole stocks

NOLAN SALES CORPORATION
Tulsa, Okla. Seminole, Okla.

WANTED TO BUY

Lots of Extra Heavy, Double Extra Heavy, and Hydraulic Pipe, in new and second-hand. Advise what you have, quantity, lengths and condition.

EASTERN PIPE SUPPLY COMPANY
1424 N. Ninth Street
PHILADELPHIA PENNA.

WANTED—Large-sized Baker cable tool core barrel to take 3-inch core. Box A-322, The Oil and Gas Journal, Tulsa, Okla.

Mailing Lists

ROYALTY owners, Oil Investors, Unit holders, Stockholders in Oil and Royalty Companies. Personnel lists of every branch of oil industry. All by States. We buy lists. New catalogues ready. Oil Industry Mailing List Co., Tulsa Loan Bldg., Tulsa, Oklahoma.

Geologic Survey

GEOLOGISTS—SURVEYORS

Looking for U. S. or State Geologic Surveys, or other government publications? Write Cornwall's Book Store, 723 Eleventh Street, Northwest, Washington, D. C. Unusually large stock.

Financing

DEVELOPMENT loan or advance negotiated on commission basis for a matter of exceptional merit. Box 5411, Philadelphia.

CRUDE-OIL PRICES IN REPRESENTATIVE FIELDS

Complete crude-price schedules are now being published in the first issue of each month. The last complete schedule was published in the January 2 issue All changes in crude-oil-price schedules will be published completely in the first issues following the announcement of the changes. Following are representative crude-price schedules in barrels (42 gal.):

East Texas	$1.10
Conroe	1.27
Tepetate, Louisiana	1.03
Smackover, Arkansas, heavy	.73
Illinois basin	1.15
Pecos County, Texas	.78
Lance Creek, Wyoming	.77
Bradford, Pennsylvania	2.15

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

	Hill, California* Signal	Oklahoma, Kansas	Coast, Texas Gulf
14-14.9	$0.65	....	....
15-15.9	.65	....	....
16-16.9	.65	....	....
17-17.9	.65	....	....
18-18.9	.65	....	....
19-19.9	.69	....	$0.86
20-20.9	.73	$0.70	.88
21-21.9	.78	.72	.90
22-22.9	.82	.74	.92
23-23.9	.86	.76	.94
24-24.9	.90	.78	.96
25-25.9	.95	.80	.98
26-26.9	.99	.82	1.00
27-27.9	1.03	.84	1.02
28-28.9	1.07	.86	1.04
29-29.9	1.10	.88	1.06
30-30.9	1.14	.90	1.08
31-31.9	....	.92	1.10
32-32.9	....	.94	1.12
33-33.9	....	.96	1.14
34-34.9	....	.98	1.16
35-35.9	....	1.00	1.18
36-36.9	....	1.02	1.20
37-37.9	....	1.04	1.22
38-38.9	....	1.06	1.24
39-39.9	....	1.08	1.26
40-40.9	....	1.10	1.28

*Effective Feb. 1, 1940.

Crude-Oil Price Changes

Humble Oil & Refining Co. posted a flat price of 78 cents per barrel for the new Hawkins pool in Wood County, Texas.

Pure Oil Co. posted a flat price of $1.02 per barrel for Cumberland, Oklahoma, crude January 10, 1941, when the company's gathering system was placed in service.

Pure Oil Co. posted a flat price of 99 cents per barrel for Bosco, Louisiana, crude on January 10, 1941. The company posted a gravity scale ranging from 86 cents for below 20° gravity crude up to $1.28 for 40° gravity and above, effective October 23, 1940, in the Louise field, Wharton County, and in the Ganado pool, Jackson County, Texas.

Tank-Wagon Changes

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falo, N. Y., January 10. All tank-wagon prices in the Socony-Vacuum table are now on a basis of undivided-dealer quotations, accounting for a decline at several points of 0.5 cent which is the normal discount.

Gulf Coast Markets

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crude-oil situation, and by assurances that some of the unfavorable conditions that have been disturbing the markets might soon be remedied.

The position of the independent and nonintegrated refiners on the Gulf Coast continues to show improvement so far as gasoline stocks are concerned, with further substantial reductions being made in storage during the latest 2 weeks of record. According to the semimonthly report of the Gulf Coast Refiners Association just issued for the 2 weeks ending January 1, the gasoline inventory of the member companies is the lowest on record, with gasoline stocks more than 1,000,000 bbl. below the peak reached the middle of last August. The report listed gasoline stocks of the member companies at 2,025,734 bbl., a reduction of 134,000 bbl. during the 2-week period.

The association also listed small decreases in diesel-fuel oil, burning oils and residual fuels, although the market on these products continues unsettled. There were no changes in quoted prices of these products during the week, but the market lacked any sign of firmness.

Kerosene slipped ⅛ cent during the week with material freely available as low as 3½ cents. This was reflected in the inventory report of the refiners association which showed an increase in stocks of 35,548 bbl. to a total of 361,814 bbl. during the last 2 weeks of December. Demand is slow for this material.

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